

CLASS TEACHING  
AND  
MANAGEMENT



ROYAL HANDBOOKS FOR PUPIL TEACHERS

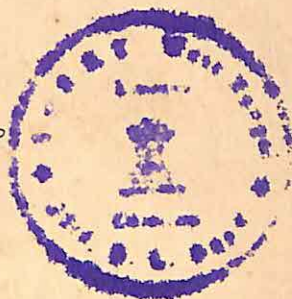


# CLASS TEACHING AND MANAGEMENT

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## PREFACE.

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THIS manual is designed for the use of young Teachers and Students in Training Colleges. It does not profess to treat of the whole subject of School Management, but only of the methods of teaching such subjects as fall within the recognized sphere of "elementary" education.

It is the hope of the writer that this manual may be found suitable as a text-book for pupil teachers who are preparing for their various examinations. But no text-book will suffice for this purpose apart from actual experience in class teaching. No attempt has been made, therefore, in this book to give lists of specimen lessons and model notes of lessons on various subjects for the purpose of enabling young teachers to answer their School Management questions from the book alone. Answers to such questions will have little value unless they express the results of actual experience based on sound principles. The aim of the writer has been rather to explain and illustrate such principles, and to leave their practical working out, whether in the examination-room or the class-room, to the pupil teacher himself; to secure as far as possible from the young teacher that *thinking about his work* which will not merely enable him to write intelligently about that work, but which will also have the much more important result of making the work itself intelligent and educative.

Wherever any method of teaching a subject is either

approved or condemned by the writer, the judgment expressed claims to be not merely theoretical, but to be based on a fairly wide and varied experience of the methods in use in schools, and of their practical results. But there are other methods than those approved here which some of the head teachers who use this manual may prefer to recommend. In such cases it will be advisable that the teacher should so far conform to the aim of the book as to make clear to his pupil teachers the educational principles underlying the methods which he prefers. In this way the divergence of opinion between the teacher and the author will help to widen the pupil teacher's view without confusing his judgment.

The questions selected from recent Government examinations in School Management, which are given as an appendix, will be found useful by those who are preparing for examinations in that subject.

# CONTENTS.

---

## READING.

Importance of the Subject, ... ..	11
Reading Aloud and Silent Reading, ... ..	11
Why Reading Aloud is Important, ... ..	12
Methods of Teaching Reading, ... ..	13
Synthetic Methods, ... ..	14
Analytic Methods, ... ..	15
Mixed Methods, ... ..	16
The Alphabet Stage, ... ..	16
The Primer Stage, ... ..	17
Reading-Sheets and Reading-Books, ... ..	18
Some Common Faults in Reading, ... ..	19
Simultaneous Reading, ... ..	21
Pattern Reading, ... ..	21
The Qualities of Good Reading, ... ..	22
The Teacher's Reading, ... ..	24
General Reading, ... ..	25

## RECITATION.

Method of Learning by Heart, ... ..	27
-------------------------------------	----

## "INTELLIGENCE."

What it Is, ... ..	29
What it Implies, ... ..	29
How to secure Answers, ... ..	29
When to Examine, ... ..	30
Meanings of Words and of Sentences, ... ..	31
Use of Word-building, ... ..	32
Preparation by the Teacher, ... ..	33

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Ed 707

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Why Reading Aloud is Important, ... ..	12
Methods of Teaching Reading, ... ..	13
Synthetic Methods, ... ..	14
Analytic Methods, ... ..	15
Mixed Methods, ... ..	16
The Alphabet Stage, ... ..	16
The Primer Stage, ... ..	17
Reading-Sheets and Reading-Books, ... ..	18
Some Common Faults in Reading, ... ..	19
Simultaneous Reading, ... ..	21
Pattern Reading, ... ..	21
The Qualities of Good Reading, ... ..	22
The Teacher's Reading, ... ..	24
General Reading, ... ..	25

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Method of Learning by Heart, ... ..	27
-------------------------------------	----

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What it Is, ... ..	29
What it Implies, ... ..	29
How to secure Answers, ... ..	29
When to Examine, ... ..	30
Meanings of Words and of Sentences, ... ..	31
Use of Word-building, ... ..	32
Preparation by the Teacher, ... ..	33



## SPELLING.

The Problem, ...	34
Its Solution, ...	34
Oral Spelling, ...	35
Incidental Teaching of Spelling, ...	36
Transcription Exercises, ...	36
Spelling Rules, ...	37

## DICTATION.

The Use of Dictation, ...	39
Preparation for the Exercise, ...	39
Errors in Dictation, ...	41
Revision of Exercises, ...	42
How to Dictate, ...	43
Unprepared Dictation, ...	43

## WRITING.

What Good Writing Is, ...	45
Writing Materials, ...	47
Initiatory Stages, ...	48
Writing Methods, ...	48
Copy-Books, ...	50
Collective Teaching, ...	51
Use of the Blackboard, ...	51
Size of Writing, ...	52
Unruled Paper, ...	52
Posture in Writing, ...	53
Common Faults, ...	54

## COMPOSITION.

Relation to Other Subjects, ...	57
Oral Answers in Complete Sentences, ...	57
Sentence-Building, ...	59
Sentence-Grouping, ...	60
Written Composition, ...	61
Connection with Grammar Teaching, ...	62
Common Difficulties, ...	63
Essay-Writing, ...	64
Matter, ...	64
Arrangement, ...	65
Schemes of Arrangement, ...	66
Letter-Writing, ...	67
Revision of Exercises, ...	68



## GRAMMAR.

Grammar as a Common-School Subject, ... ..	69
Uses of Grammar, ... ..	70
Order of Teaching, ... ..	70
Initiatory Steps, ... ..	71
Definitions, ... ..	71
Importance of Function, ... ..	72
General Cautions, ... ..	72
The Parts of Speech—The Noun, ... ..	73
The Verb, ... ..	76
Prepositions and Conjunctions, ... ..	78
Relative Pronouns, ... ..	79
Analysis of Sentences, ... ..	80
Mode of Answering, ... ..	81

## ARITHMETIC.

Its Importance, ... ..	83
Time devoted to Arithmetic, ... ..	83
Early Conceptions of Number, ... ..	84
Gradation of Steps, ... ..	85
Initiatory Lessons, ... ..	85
Notation, ... ..	86
Addition, ... ..	87
Subtraction, ... ..	90
Multiplication, ... ..	94
Division, ... ..	97
Problems, ... ..	100
Reduction, ... ..	102
Compound Addition, ... ..	103
Compound Subtraction, ... ..	104
Compound Multiplication, ... ..	105
Compound Division, ... ..	106
Calculation of Prices, ... ..	106
Practice, ... ..	107
Proportion, ... ..	109
Vulgar Fractions, ... ..	111
Decimals, ... ..	115
Other Rules, ... ..	119
Approximations, ... ..	119
Mental Arithmetic, ... ..	120

## GEOGRAPHY.

The Aim of School Geography, ... ..	122
Early Lessons, ... ..	125

Explanation of a Map, ...	125
Geographical Terms, ...	128
The Use of a Globe, ...	130
Maps, ...	130
Industrial Maps, ...	132
Statistical Charts, ...	133
Illustrations, ...	133

## HISTORY.

Why it should be Taught, ...	135
Early Lessons, ...	137
Systematic Study of History, ...	138
The Concentric System, ...	139
Dates, ...	141
Illustrations, ...	142

## ORAL TEACHING.

Object or Gallery Lessons, ...	145
The Aim of Object Lessons, ...	146
Series of Lessons, ...	146
Preparation for Oral Teaching, ...	147
Arrangement of Matter, ...	148
Illustrations, ...	148
Experiments, ...	149
Notes of Lessons, ...	150
Teaching and Learning, ...	152
Thoughts about Thinking, ...	154
Memory, ...	154
Practical Deductions, ...	156
Questioning, ...	158
Notes on Questioning, ...	160
Attention, ...	162
Class Discipline, ...	165

## THE TEACHER.

Manner and Manners, ...	168
Sympathy, ...	170

## APPENDIX—

Pupil-Teacher Examinations, ...	173
Training-College Examinations, ...	182

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# CLASS TEACHING AND MANAGEMENT

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## READING.

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### Importance of the Subject.

**A**MONG the subjects which are usually taught in our common schools Reading claims the first place, on account of its important practical uses in after-life. From one point of view it may be regarded as the only subject which is indispensable. When a boy has acquired the power of reading, he possesses the key to self-instruction in any subject he may select; and many men have reached a high position as regards learning whose early education was confined to this one subject of instruction.

In general, it will be found that the extent and the character of a man's reading determine the extent and the character of his education—his self-education, as distinct from his school training. His mind will be stunted, or perverted, or well developed, according as he reads little, or reads pernicious literature, or reads such books as contain the best thoughts of his own and of other ages.

### Reading Aloud and Silent Reading.

Reading is often said to be at once the most important and the worst-taught subject in schools. This requires some explanation and qualification. Reading aloud is by no means well taught in a very large number of schools; but it is not



reading aloud that is meant when we say that reading is our most important subject. Not one-tenth, perhaps not one-hundredth, of our reading in ordinary life is read aloud. What is of real practical value is the **power of silent reading**. But as the reading aimed at in schools is almost exclusively reading aloud, the other form is too much left to come by nature.

Reading aloud may be regarded as one of the fine arts, silent reading as one of the industrial arts. The former is, in the case of most people, a luxury, the latter is a necessity. Among grown-up and tolerably well-educated people, a good reader in the former sense of the word is probably rarer than a good singer. Really good elocution is not common even among those whose profession demands that it should be studied. And if we keep in mind the standard of elocution which seems possible or practicable among educated people, it must be said that the elocution found in the majority of schools scarcely merits the reproaches it sometimes receives. But this must not be regarded as a reason for resting content with anything short of the best that can be attained.

### **Why Reading Aloud is Important.**

While it is not elocution but the power of grasping the meaning of a passage by silent reading that is of real practical use, and is the proper aim in the teaching of reading, there are certain reasons why the teaching of oral reading is a most important branch of school work.

1. **The sound is the link between the written word and its meaning.** The letters represent sounds, and these sounds represent thoughts. The letters represent thoughts only indirectly. Language is a **system of sounds** to represent thoughts or meanings; afterwards, and in a secondary sense, it includes the **written symbols** which represent these sounds.

The pupil's work in reading is primarily to acquire the power of **translating the written signs into sounds**. These sounds or words he can already (in the case of his mother-tongue) translate into thoughts; that is to say, he already knows their meaning.

The power of **grasping the meaning without thinking of the sound** comes much later, and in imperfectly educated persons never comes at all. Such persons always pronounce or half pronounce the words they read.

2. **Oral reading enlarges the vocabulary of the pupil.** It enables him to use correctly in conversation many words which



do not belong to what we may call the "mother-tongue" of the circle in which he moves.

An imperfectly educated man will no doubt learn to understand the meaning of words in his newspaper or elsewhere which he has never heard pronounced. But it is part of the teacher's work to extend the available vocabulary of his pupils, so that a larger number of words may be not merely understood but used orally. Every new word, if properly taught, implies a new idea received, and therefore an extension of the intellect.

3. Oral reading is the best available test for finding out how far the pupil understands the meaning of a printed passage. The only other test which the teacher can apply is that of questioning on the passage read, orally or otherwise; and this alone would form a much less convenient method in class teaching, on account of the time required and other difficulties.

This is the true reason for the importance rightly attached to oral reading in schools; and from this point of view the one indispensable feature of satisfactory reading is that it should be intelligent—that it should be of such a character as to show that the pupil understands what he is reading. All other qualities of good oral reading are on a lower plane as regards practical utility.

4. In senior classes the oral reading of rhetorical, and especially of poetical, passages is of value in developing the sense of beauty and harmony. The full value of such passages can only be got through the music of the spoken words. There is more than mere meaning in poetry—there is harmony of sound; and this is lost in silent reading, or, at the best, only remembered or imagined; it is not actually present to the senses.

This use of oral reading, and especially of recitation, should not be lost sight of in the very proper striving after the more practical aims of our reading lessons. And it may be well to mention here that such exercises as oral explanation and paraphrasing only touch the meaning of the poem under study; and, moreover, that these exercises may be well enough done while yet the finest part of the training which the use of such passages should yield is quite missed.

### Methods of Teaching Reading.

The various methods now or formerly used for teaching beginners to read may be grouped under two heads:—

I. **Synthetic (composing, or building up) methods**, where the child is first taught the letters, and then combines them into words.

II. **Analytic (de-composing, or breaking down) methods**, where the child is first introduced to words or syllables, and learns from these the power of the letters composing them.

### I. Synthetic Methods.

1. **Alphabetic Method.** According to this method, the alphabet is first learned, and every word is spelt orally before being pronounced. It is now generally condemned as being uninteresting, unnatural, and unsuccessful, when the results obtained are compared with those of newer and better methods.

The harsh, simultaneous yell of "c-a-t, cat; c-a-t, cat; c-a-t, cat," repeated over and over until the word was supposed to be known, was probably the most repulsive form of school drudgery to teacher and pupil alike. It was intended as a means of teaching spelling as well as reading; but oral spelling, as we shall see later, is of very little use.

2. **The Phonic Method.** By this method the teacher aims at teaching the sounds or powers of the letters, so that the pupil can build up the sound of a new word by sounding in close succession its constituent letters. To get at the sound of the new word "cat," he sounded "k-ah-t," for he already knew the force of each letter.

This is a distinct improvement on the former method, and it is very much the plan we use in dealing with new words, such as names of places, when we meet them in our reading. Its defect as a reading method is chiefly due to the **irregularity of our sound-notation**. The same letter has by no means always the same sound, nor is a given sound always represented by the same letter. The long sound of *ā*, for instance, may be represented by *a*, *ea*, *ae*, *ai*, *ay*, *ei*, etc. Another objection has been taken to the method in that it is more in accordance with the natural mental processes to begin with the whole (the word) and analyze it into its parts (the letters). This objection, of course, applies to all synthetic methods.

3. **The Phonetic Method.** This method proceeds on the same principles as the phonic; but it aims at getting over the irregularity of our alphabet by a phonetic spelling, according



to which words are spelt at first as they are sounded, each letter having one fixed value.

As there are over forty distinct sounds in the language, this means that new symbols have to be invented. The objection to this method is very plain. When a child has learned to read words written on this plan, he has still to learn to read ordinary English. And when he has learned to spell on such a plan, the recognized spelling of words must present serious if not insuperable difficulty. Phonetic spelling is only too common a fault among children who have never been taught it.

## II. Analytic Methods.

1. **Look-and-say Method.** The name here indicates the procedure. The child is introduced to complete words—short ones, of course—and his attention is directed to the form, the sound, and the meaning. Thus, he looks at the printed word "cat," he pronounces it after the teacher, and he is required to realize its meaning by help of a picture or otherwise. Later, he is required to analyze such words into their parts, telling which part represents the sound "k-," "ah," and "-t" respectively by aid of comparison with words where similar sounds and signs occur. He is thus prepared for re-combining these into new words, or applying his knowledge of such parts to find out the sound of new words presented to him.

This system, as will be at once evident, is more likely to prove interesting than any of the synthetic methods. It has been productive of good results, and conduces to thoughtful teaching. But, like every logical method, it must not be too slavishly adhered to. Young minds, perhaps old minds too, are not purely logical; and there are many stronger aids and incentives to learning than any one system or method can include.

2. **Syllabic Method.** This resembles the former, but more attention is given to classified syllables than to words as such. The force of the letters is deduced from a comparison of similar syllables, and the pupil is then ready to combine them in new forms as before.

The strong and weak points of this method are similar to those of the look-and-say method. Again it may be said that the method is sound if not too slavishly followed. As a method to be employed in teaching reading, it is simply indispensable in some of its aspects. As a sufficient method, its adoption might be less worthy of recommendation.

### Mixed Methods.

Probably far too much has been made of the differences between the various methods of teaching reading. It is only in the very first stages that any one method can be used exclusively; and the particular method adopted counts for very much less than the power of the teacher to use his method so as to train the observation and awake the interest of the child. As a matter of fact, most teachers use some method of their own which may combine features from several of the methods mentioned. Nothing but practice will reveal to the teacher which method will be most effective for him to use, and most in accordance with his own habits of mind.

The fact that a certain method will enable children to read a given book in a shorter time than any other method is not all that should be looked to in adopting a method for one's own use. Reading is not merely the power of remembering words once seen and heard, but of **dealing with new words** which have not been seen, although they may have been heard before. Indeed, one may be safely advised to entertain some wholesome suspicion of any method that is recommended by ease and rapidity. True power to read, or to do aught else, is of slow growth.

### The Alphabet Stage.

The first step in teaching reading is, naturally, to learn the alphabet. This is a necessary preliminary under the synthetic methods, and it must be taken very early even under the analytic. If it be taken at the beginning, there will be the less break in the continuity of the teaching of reading proper.

While the analytic principle of beginning with wholes rather than parts is a sound one, a **letter is a sufficiently complex whole for a young child** unaccustomed to those curious black marks on the white paper, at first so very much alike to him, and yet so very unlike when he knows them better. His mental picture of a word of even two or three letters is apt to be too vague to enable him to recognize it again when he sees it. He will "look and say" to better purpose when he is somewhat familiar with the shapes of the things which words are made up of.



The chief reason for beginning with the letters is that this gives definiteness to the observation of the words from which the sounds of these letters will shortly be deduced. It also enables the teacher to call attention to any part of a word which the pupil has overlooked, by the natural mode of mentioning that part by name. At this stage, the names of the letters are merely the names of *forms*, not of sound-symbols. It is obviously true, as has so often been said in condemnation of the alphabetic method, that the sounds *see-aye-tee* give no help in reaching the sound of the word *cat*. But it is also true that when a child knows that this word *cat* he is looking at and saying is made up of *forms* which he already knows, and can name to himself, the forms of *c*, *a*, and *t*, he is much more likely to recognize that word when he sees it again. And when the word *cat* is shown him, he sees the difference in form more readily, and recognizes that the sound of this new word is *not* cat, whatever else it may be.

The *order* of the letters in our alphabet is of little consequence at this stage. Indeed, it is of no consequence until one has to consult a dictionary, or some list of words in alphabetical order. The letters should be learned in the order of their simplicity or definiteness of form. Thus *o* is probably the simplest form to recognize, *x* being almost equally simple. Then *i* and *j* with their dots, *t* and *f* with their crosses, *v* and *w* with their angles, are easily individualized and remembered.

As a general rule, the letters should be learned in the order in which the child would find it **easiest to draw them** (in printed form). The reason of this is evident: the mental process involved in examining and recognizing any form is practically identical with the mental process involved in actually drawing that form. And for this reason it is clear that the actual drawing of the form is the best way to make sure of knowing and remembering it. Every means which stimulates interest in the form should be used, such as the use of letter cards or blocks, laying sticks in the required shape as in kindergarten exercises, and so forth.

### The Primer Stage.

When the names and forms of the letters have been learned, the powers or sounds have next to be understood. Here the teacher has a choice of two distinct roads along which to lead the pupil—synthetic and analytic.

1. The pupil may be required to learn directly the more important sounds of each letter; or
2. He may be taught short words on the look-and-say prin-

ciple, and from these he may be led to deduce the powers of the constituent parts.

The latter method has many advantages to recommend it, and is now generally adopted by teachers. There are some thirty-four words of two letters in the language, mostly regular in their notation, and these, properly arranged, form the best introduction to the actual reading of words. From these, again, the normal sounds of the letters employed can be most easily learned. As soon as this has been done, the pupil is ready to engage in a very elementary form of word-building. The word **or** being known to him, and the power of the letter **f**, he can build up the sound of **for**. A little later the word-building process can be reversed: **at** being known, and the power of **r**, when the word **rat** is pronounced the pupil knows that **r** placed before **at** will form the word required. There are many of our three-letter words where this process cannot be used, and in such words the look-and-say method must be returned to.

Wherever possible, the actual building up of new words should be done by the pupil. The interest aroused by **making** things is at least as strong as that aroused by breaking up things and finding out what is inside them. The pupil who thus **makes** words is best able to grasp the structure of an unfamiliar word, just as the man who is used to making one kind of machine can understand the structure of a new machine better than the man who has only looked at and never constructed one. This is a principle which applies all through school work and beyond it. Doing alone is learning; looking or listening has not the power to awaken interest or to give clear impressions in the same degree.

### Reading-Sheets and Reading-Books.

The question is sometimes raised as to the comparative value of wall-sheets and of books for the early stages of reading. Large wall-sheets are almost indispensable for class teaching. The attention of the class is concentrated; there is no danger of losing the place, and no cause for looking on a neighbour's book to see where he is looking. For all "look-and-say" work, and for the analysis or building up of new words, wall-sheets or something equivalent to them—such as reading-frames with movable letters, or the blackboard—should be in constant use.



But as soon as the pupils are introduced to little sentences formed of the words they have studied, a reading-book should be used by each. The sentences may for a time be read over first on the lesson-sheet, but not so often as to lead to their being committed to memory. Then the same exercise should be read on the books, each child attending to his own, and pointing to the place, both to help him to follow the reading and to let the teacher see that he is looking to the right place. But pointing to the words should be discontinued as early as possible, as it is sure to prevent proper phrasing in reading.

### Some Common Faults in Reading.

1. **Reading word by word, instead of phrase by phrase,** is the most common fault in the early stages of reading. This seems unavoidable at the very earliest stage. But if all **new words** are studied thoroughly before they are used in sentences, and if too many new words are not introduced at a time, even in what we have called the primer stage this fault can be avoided.

Several methods may be adopted or invented to meet this case. One of the best is to ask the pupil to tell the teacher what he has just read. From the book he may have read, "The—cat—is—on—the—mat;" but when asked to tell it, he looks up and says, "The cat is on the mat," quite naturally. The teacher may then ask what the sentence was about, and the pupil answers, "The cat." "What is said about the cat?" "It is on the mat." The next step is to get him to **separate these two parts by a slight pause**—"The cat—is on the mat"—and then to read it so from the book. Other pupils then read the sentence with the same grouping of words, until the principle is familiar. By some such means as this the idea of grouping words becomes familiar and habitual.

2. **Bawling or shouting** is another common fault in young classes. It is usually worst when phrasing or grouping the words is not practised. The same plan may be taken to cure this fault. A boy who reads from his book at the full force of his voice should be asked in the same way to tell the teacher what



he has just read. In most cases he will do so in a quite natural tone, perhaps in so low a tone that he may have to be asked to speak a little louder. When he has done so, he should then be asked to read the sentence in the same natural tone. At first he may fail to remember, and the contrast between the reading voice and the speaking voice is apt to strike the rest of the class as ludicrous; but a persistent use of this method will in most cases effectually abolish the tendency to shout.

It should be noticed that this fault may spring from various causes. Sometimes it arises from a nervous eagerness over the difficult task of reading, and more familiarity with the process will lessen the strain and lower the tone naturally; but, on the other hand, it is apt to become a permanent fault if not checked. Again, it is sometimes due to the class being too large, in which case the natural tone is felt to be too weak. But even in this case the pupils should not be allowed to speak louder than is absolutely necessary for audibility when there is, as there always should be, perfect order in the room. There is one reason for loud reading which has only to be mentioned in order to be condemned—the want of perfect order during the lesson. Loud reading is often an accompaniment or weak discipline, just as loud speaking by the teacher often is. In this case the fault is the teacher's.

3. The opposite fault of inaudible reading is more common in older classes, especially girls' classes. This is more difficult to cure. It generally accompanies inaudible answering in oral examination. Simultaneous reading is sometimes resorted to, but not always with the desired effect. The pupils should be taught to believe that too low a tone is by no means a mark of good breeding, as some girls seem to suppose, but that it is really rude to speak so that a listener has to strain his ear to catch a reply. A peremptory order, or anything approaching to bullying a class in which this fault exists, has generally no effect, or an effect the reverse of what is intended. A general tone of healthy earnestness about the work is perhaps the only real cure, and this cannot be cultivated without time, care, and skill.

### Simultaneous Reading.

Simultaneous reading is resorted to by many teachers as a kind of universal cure for faults in reading. It has a certain value in securing practice in phrasing, and in encouraging timid pupils. But in even a moderately large class the pupils for whose benefit the practice is adopted often take little or no share in the exercise. It can only be really effective when the class is so small that the teacher can watch the utterance of each child, as the leader of an orchestra can follow the tone of each instrument. And it is precisely in these small classes that simultaneous reading is found to be least necessary. It is an exercise which should be sparingly used, and only for some definite and specific purpose; and the teacher would do well to see whether that specific purpose is really being accomplished by it.

It should be remembered that the practice of simultaneous reading or recitation is apt to be hurtful to the musical ear of a class. The pupils read in all varieties of key, and the inflections are taken in all kinds of intervals. The result is painful to the listener, and dulls the sense of pitch in the performers. Many teachers of singing complain that it increases the difficulty of getting a class to sing in tune, as compared with other classes in the same school where the simultaneous exercise is less freely used.

### Pattern Reading.

Many misleading half-truths have been written about reading being an imitative art, requiring much pattern reading by the teacher. It is the habit of some teachers to read the whole lesson first, sentence by sentence, followed by the pupils in the same way. Nothing could be more fatal to the development of the real power of reading. Reading is an imitative art in the same sense as speaking is; but the power of speech would be but indifferently developed if the child confined himself to phrases actually heard, without experimenting in the combination of words and phrases for himself.

Pattern reading should never extend to the whole lesson, or even any considerable part of it. The teacher should only use it for the purpose of illustrating general principles and correct-



ing faults of pronunciation and style, which cannot be put right by the pupil's own attempts.

The abuse of pattern reading frequently reduces a class to such a pitch of helplessness that they will not attempt to pronounce a new word, however like one already known, **without first hearing it pronounced**. Even actual errors should be as far as possible corrected by a method designed to cultivate individual power, and with a view to avoiding similar errors in future. If a word is mispronounced, such a caution as, "Put the accent on the last syllable," or, "Sound the *ch* hard," or, "The *h* is silent," should be given; and the children should be taught very early to know the meaning of such instructions. If the phrasing is faulty, let the pupil look at the sentence and tell which words naturally go together according to meaning, or, at a later stage, according to grammatical relation, and then ask him to read it in accordance with the rules he has discovered and laid down for himself. Only in the last resort should the word be pronounced or the sentence read for him. Pattern reading should only be used as a pattern or type to be aimed at, not a means of avoiding the difficulties of teaching reading. If a fence has to be got over, show the boy where to climb it, and if necessary stand by to help him if he falls, but don't lift him over. There are more fences in front, and the sooner he learns to climb the better.

### The Qualities of Good Reading.

If word-building, and the habit of dealing with new words syllable by syllable in the light of words already known, are systematically practised, the difficulties of mere word-naming become fewer and fewer as the pupil advances. There are other points which meanwhile occupy more of the teacher's attention during the reading-lesson. But though their systematic treatment may come only in the later stages of the pupil's progress, the teacher should have had them distinctly before his mind from the very beginning. The following are the most important:—

1. **Pronunciation.** This term is generally restricted to the proper sounds of the **vowels** in a word. This point must be carefully attended to from the beginning.

2. **Enunciation** is usually understood to refer to the **consonant** sounds. The difficulties connected with this and the preceding point vary in different districts. Sometimes it may be the letter *t*, sometimes *ng*, sometimes *r* or *h* that is slurred over.



3. **Articulation** means the proper connection of syllables in a word, or of words in a phrase. The omission of unaccented syllables is the most common error under this head, and this omission is usually unnoticed by the speaker. It is due to the fact that the mouth is not opened to sound the short or unaccented vowel, and consequently there is no sound conveyed to the listener.

The distinctness of reading depends largely on articulation combined with the preceding qualities, and no amount of loudness will secure distinct utterance without proper pronunciation, enunciation, and articulation.

4. **Accent** is the stress laid on some individual syllable in a word. This is more easily secured. Pupils should be taught the meaning of the marks in common use both for accent and for long or short vowel-sounds, so that words thus marked in their books can be pronounced without the teacher's pattern.

5. **Emphasis** refers to the stress to be laid on particular words in a phrase, or on particular phrases in a sentence. It is thus an extended form of accent.

6. **Phrasing and voice-pauses.** The words which constitute a group or oratorical phrase are run together quite as much as the syllables in a word. These phrases or extended words must be separated from each other by a break in the continuity of the sound, which does not necessarily mean a perceptible pause. These voice-pauses are distinct from the pauses which are marked by punctuation; they are less formal, and often more difficult to learn.

These two qualities, emphasis and phrasing, are the most important elements in intelligent reading as compared with merely correct or distinct reading. They are necessary in order to show that the pupil understands what he is reading; and if he does not understand it, no rules will enable him to give the proper emphasis and phrasing. These qualities are also necessary to enable the listener to understand what is being read. In order to keep his ear attentive to these points, the teacher should avoid following the reading lesson on the book; the reading should appeal to his ear, not his eye. And the necessity for such qualities will be impressed on the class by the frequent practice of making the pupils read one by one to the class from some book or paper which is not in the hands of the others, and is not familiar to them.

7. **Fluency** or ease in reading is possible only when the difficulties of word-naming have largely disappeared. Fluency must not be confused with rapidity. It is rather to be developed by a deliberate style of reading, which enables the eye to travel in advance of the voice, and to grasp a complete phrase or clause instead of only one word at a time. **Rapid reading** usually prevents fluency, by the pupil in his hurry missing the true bearing of the various phrases, and by the actual slips and errors in words as well as in voice-pauses to which it leads. The only means of securing reading at once fluent and intelligent is to cultivate the habit of grasping the whole phrase before beginning to read it aloud, and for this deliberateness is at first essential, and always helpful.

Practice alone will produce ease and fluency, but this practice must not be in the form of re-reading familiar passages. It is rather practice in reading new matter which is wanted. The utmost glibness and apparent ease in reading the class-book may and often does accompany a remarkable want of fluency in reading new passages of a similar grade.

8. **Modulation and expression** may be taken together as describing the highest and rarest quality of good reading. This applies not merely to the inflection of the voice needed to show the completeness or incompleteness of a sentence, or to indicate a question. It also means that the tone of voice should be modulated to suit the kind of passage read. Expressive reading can be best cultivated by the reading of passages which make special demands on expression, such as conversation or dialogue, dramatic pieces, and good poetry.

There are other points which might be dealt with in detail, such as pitch, rate of speed, and the like, but they are either too obvious to need explanation, or have been incidentally taken up already. All the qualities enumerated above require careful notice in order to secure accurate, intelligent, and expressive reading.

### The Teacher's Reading.

It is not every teacher of reading that can read well, and yet there is no subject in which example is so valuable an aid to precept. Many pupil-teachers receive too little instruction and practice in the art, judging from the results produced. The



young teacher must practise reading aloud for his own improvement, and should not be above making good use of his pronouncing dictionary. A distinguished teacher and professor of elocution says that he found nothing so helpful as the practice of reading aloud a few pages of such a dictionary now and again. Until we test ourselves in this way, probably few of us know how many words we habitually pronounce wrong, and how many unaccented syllables we never pronounce at all.

Another useful exercise for both teachers and pupils is that of reading aloud not merely a few lines, but a pretty long passage. Unless this is carefully practised, the reading is apt to fall off in quality after the first sentence or two, or, from want of knowing or practising the proper way of breathing, the exercise is found very fatiguing.

### General Reading.

The aim of our teaching should be to cultivate the power of reading rather than the ability to read one particular book. In young classes the too frequent reading of the same book leads to an unintelligent and deceptive fluency which is really reading by rote. The evil results of this are frequently seen in the form of blunders due to children saying the words which they expect to find, instead of those which actually are found in the lesson. This kind of inaccuracy seems epidemic in certain classes, and is always worst when the passage read is very familiar. Indeed, it is a matter of common experience that classes will read an unprepared passage more correctly and intelligently than the familiar lessons of their book. Intelligent reading implies that the pupil is taking an intelligent interest in what he reads, and it is difficult to do this with a passage in which every idea, and even every phrase and word, are familiar *ad nauseam*.

Hence the benefit of using two or three different books during the year, and, in classes old enough to make it practicable, of using other books, magazines, and newspapers for reading (and listening) practice. This use of general literature as a supplement to school-books is of great value likewise for the cultiva-



tion of intelligence, and for fostering a taste for reading. Extracts and articles should be most frequently chosen which have a special bearing on the geographical or historical studies of the class, or on some topic of interest at the time. These will often be helpful in giving a practical and interesting turn to studies which are apt to be rather abstract and dry to children. A school library which can be made use of for this purpose is of much service, and has this further advantage that books thus used in the class can afterwards be taken home and read in full by the pupils.

## RECITATION.

**L**EARNING by heart and reciting passages of poetry usually forms part of our ordinary school work, and this exercise is of much use as an aid to intelligent and expressive reading. The passages should be selected with the further view of cultivating the taste, and should be pieces really worth remembering. For little children, bright and amusing pieces are most suitable, and those of a gloomy or sad character should be avoided. Gloomy sentiments are unnatural to young pupils; and when pieces of this character are chosen, the sentiments are either not realized by the children, in which case a carelessness with regard to the expression of feeling in poetry is fostered, or if the sentiments are realized, the effect on the young mind is undesirable from another point of view. Words and feelings alike should be suited to the age of the children, for it should be remembered that the mere meaning of the words is only part of what good poetry conveys to the mind.

### Method of Learning by Heart.

Too little attention is often given to the proper method of learning by heart. A common plan is to allow the children to con the words over silently, or aloud, in a careless, monotonous fashion, until they are committed to memory, and then to develop the proper expression as they are recited time after time. This is wrong, for various reasons.

Any clue added to the mere sequence of words strengthens the memory, and makes the learning more effective. Thus it is easier to learn a connected sentence than a mere list of words, because the meaning comes in to help the memory of the words.

For the same reason metre and rhyme help to make poetry more easy to learn than prose of similar difficulty of meaning. Hence it is easy to see that if, along with the sense, metre, and rhyme, we make use of the proper emphasis and expression, we have additional clues to guide the memory.

The practical lesson is obvious: from the very beginning the passage should be read aloud with due expression, modulation, and emphasis; and this for the simple reason that it is the surest way to remember the passage. There is a real economy of time and labour.

But this method has a more important bearing still on the style of recitation. It commonly happens that whenever a pupil has to make any effort to recall the words of his recitation, emphasis and expression at once disappear, and this is simply because the words and their expression were not connected in his mind at first. He tries to remember the words by the clue of their visual appearance in the book, instead of by their sound added to their appearance. If the teacher wishes to have word and sound (including emphasis) reproduced together by the pupil, he must see to it that they are learned together, and never afterwards separated in the practice of recitation. And what is true of sound and expression is equally true of whatever gesture may be considered appropriate. These should not be left until the words are remembered, but should form a part of the learning as they are to do of the reciting.



## "INTELLIGENCE."

### What it Is.

**T**HE object of teaching reading, as we have seen, is to give the pupil the power of understanding the meaning of the printed words presented to him. The teacher has two methods available for discovering how far his teaching has been effective in securing that end. The first method is **oral reading by the pupil**, who can read intelligently only what he understands, at least in a general way; the second method is **oral questioning by the teacher** on the sense of the passage read, whether the reading has been oral or silent, and whether the passage has been read in the class or at home. This oral answering of the teacher's questions has come to be known technically as "Intelligence."

### What it Implies.

On the pupil's part such oral answering implies the power of expressing the **meaning of a passage in his own words**. This power again implies two things, which are to some extent at least distinct from each other—(1) a **clear understanding of the meaning** of what he has read, and (2) a **command of words** to express that meaning in another form. It is important to think of these two points as distinct, as the teacher will thereby be better able not only to understand a pupil's failure to answer, but also to deduce many important rules by which he may make his questioning more effective and educative.

### How to secure Answers.

It may be stated generally that with lessons so clearly written and carefully adapted to the pupil's age as those now found in

all good school-books, the **chief difficulty** of the pupil is rather the want of language than the want of comprehension of the lesson. But fluency in the use of words can only be reached by actual practice. Hence it is important that the teacher should question not only on the difficult parts of a lesson, when he may have reason to doubt the pupil's power of understanding the meaning, but also, and more especially, **on the easy parts which he is certain the pupil does understand.** In answering such questions only one of the two difficulties has to be faced—the difficulty of finding and rightly using the proper words. This rule is of special importance in dealing with classes or pupils that are backward or shy in answering. In such cases the teacher may even find it useful to explain for the pupil, without questioning, the more difficult passages, both in order to save time and to avoid discouragement to himself and his pupils; but the easy passages which cannot possibly be misunderstood must always be explained by the pupil. In this way the dull pupil acquires the habit of **trying to answer.** He does not come to regard a question as a conundrum which can only be solved by his brighter comrades, but as a call to do something which he has found to be quite within his own power. And this habit of *trying to do* something is a much more valuable result of education than the understanding of the most difficult matter treated of in his book.

Used in this way and for this end, oral questioning becomes something much higher than a mere method of examining. It becomes a powerful means of education—that is, of cultivating the power of *doing* as well as of understanding.

### When to Examine.

The habit of questioning at the end of each sentence is open to several objections. It breaks the continuity of the oral reading, and is apt to lower its quality. It is also unnecessary, if the sentence has been intelligently read, for this indicates that its general scope is understood. But if the sentence has been read in such a way as to show that its meaning has been missed, it may be useful to put a question designed to lead the



pupil to its true bearing, and then have the sentence read once more so as to bring out this meaning. This is more useful by far than the plan of reading it as a pattern for the pupil. The latter method may be the shorter way of getting the correct rendering of the sentence, but there is a danger of the pupil missing the reason why this rendering is correct rather than his own. And there is the further danger of weakening his power of self-reliance and initiative when difficulties have to be faced.

But if the lesson be a long or difficult one, it will often be advisable to have it explained section by section, in order that the reading of a later part may not be marred by failure to grasp the meaning of an earlier one. No rules can be laid down in such matters. In this as in most points of real importance in method, the teacher must be guided by his own experience, and by his skill in detecting how far his class is grasping the meaning of the lesson.

Oral questioning may be carried on either with the class-books open or shut. With **young classes**, where the sentences and lessons are short, it will be found best to have **books closed** during the exercise. The attention of young children is easily distracted, and it is difficult for them to attend both to the teacher's voice and to the printed page. In lessons for more **advanced pupils**, where the sentences are longer and more involved, it is well to have the **books open for reference**. For such classes it is less distracting to have the lesson before them for occasional reference than to carry in their memory the whole context and setting of any word or phrase that may be under discussion.

### Meanings of Words and of Sentences.

Questions should not be confined to the meanings of individual words. Such questions are necessary, and the ability to answer them is of the highest importance. But **this is only part** of the scope of what is called “Intelligence.” It is quite possible for a pupil to know, by help of “meanings” supplied in his lesson-book or in a dictionary, the meaning of every individual



word in a sentence, and yet to miss the bearing of the sentence as a whole. And, on the other hand, it is often found that pupils have a good grasp of the meaning of a sentence, and yet are unable to give synonyms for certain words in it. The two things are, to a large extent, distinct exercises of the intellect. And on this account the teacher must be the more careful that he does not neglect either of them. The power of grasping the general meaning is the more important for practical purposes. But dealing with individual words is of much value for cultivating definiteness of thought, as well as for enlarging the pupil's vocabulary and giving fluency in the use of words.

### Use of Word-building.

In teaching the meaning of a word, the teacher should be on the watch for points which will make the meaning more easily and surely remembered. The best clue is that of **the form or build of the word**, when it is formed from some simpler and better-known word. Wherever possible, the smaller root-word should be used in giving the meaning of the compound. Thus, "unable" should be explained as "not able," rather than "powerless," and "powerless" should be rendered by "without power," rather than by "unable." By such means pupils get into the habit of looking a new word in the face, so to speak, in order to discover some family likeness to words which they already know.

Of course this habit will lead to occasional errors, but the error will be at least an intelligent one; and it is a much better habit than the common one of the pupils waiting until they are told some meaning, and then trying to remember it without seeing *why* the word means that rather than anything else.

This method of using the root or stem word in getting at the meaning of a compound is in no way dependent on a knowledge of Latin or other roots. It should be used from the very earliest stages. And even when a teacher wishes to use the Latin roots systematically, they should be taught in their English form, unless, indeed, the class is also studying the Latin tongue. The Latin *termination* is unnecessary, and to pupils ignorant

of the use of such terminations it is only distracting. Thus, it is enough to teach that in such words as *respect*, *inspect*, etc., the part *spect* means *look*; no good end is served by saying that *specto* means *I look*. The -o or -um or -are termination is a matter of no importance, and is for the pupil only a meaningless fact to remember for a time.

### Preparation by the Teacher.

If a young teacher is to use this method effectively, and to teach the meanings of words by their structure and the family relationships that exist among them, one thing is urgently needed—he must prepare his work at home. Even if he is qualified to deal with each word just as it comes in the lesson—which few teachers are—it is still a bad system for the pupil. It is much better that the teacher should note beforehand the words that lend themselves to this mode of treatment for giving new instruction, and also as examples of rules and principles previously explained.

This implies that the teacher possesses a copy of the class-book. Every teacher who is in earnest about his work does so. Others may even forget themselves so far as to borrow a book from the class—a most objectionable and undignified habit. Many teachers have found it profitable to have their books interleaved with blank paper. This is more necessary with advanced text-books; but for elementary reading-books sufficient space may generally be found on the blank margins of the page for making the jottings and memoranda which are always necessary.

**Complete answers** should always be insisted on. This does not by any means imply that every answer must be a grammatically complete sentence. The complete answer may be a single word, or a phrase, or, again, a grammatical sentence. There is no reason why an answer should always have a subject and predicate any more than a question should, and the common and useful question "Why?" certainly does not. The essential point to notice is this, that if a phrase is required, a mere word is not to be accepted as a sufficient answer; and if a complete sentence is required, nothing less should be offered or accepted. Confusion between *complete answers* and *answering in complete sentences* is by no means uncommon, either in actual teaching or in books on the subject. Further consideration of the same subject will be found under "Composition."



## SPELLING.

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### The Problem.

**I**N spelling, the problem is the converse of that in oral reading. It is this: **Given the sound of a word, to represent that sound by the conventional written symbols.** If we think of oral spelling, the problem will be—to name the conventional written or printed symbols. But in actual practice we only require to spell when we are writing, and so we may regard the former statement of the problem as being the more useful.

### Its Solution.

When the problem is thus stated, it is evident that its solution lies in teaching spelling through the medium of the **eye rather than the ear.** Spelling is a practical necessity only when we write. What the pupil requires to know, therefore, is the written form of the words; and what the teacher has to do is to cultivate visual memory in this connection, so that the pupil knows by the form of the word he has written whether it is right or wrong. When a person feels uncertain regarding the spelling of a common word, he generally writes down the word in question, and decides by the look of it, though he was unable to decide by merely thinking of the symbols.

If our alphabet were phonetic or regular, having a symbol or fixed combination of symbols for each sound in the language, and only one sound for each symbol, the teaching of spelling would be a simple matter, and the sound of the word would be the best key to its visual representation. But our whole system of spelling is ~~is~~ regular in the highest degree, and we must practically learn the spelling of each word individually. As a matter of fact, most of our words do fall into classes or groups



as regards spelling; but there is nothing in the sound to indicate which group a word falls into, or whether it is anomalous and an exception to every rule.

### Oral Spelling.

This does not mean, however, that oral spelling is quite useless. In the early stages of reading, the spelling of words is found useful as a means of **calling attention to the build of the word**—the names of its parts; and a word may be described, that is, spelt, for this reason either when present to the pupil on his lesson-sheet or not. But this is to be practised for the sake of correct reading, correct observation of the form and build of words, rather than as a formal spelling lesson. This rudimentary kind of spelling is necessary for the use of comparison, or observing likenesses and unlikenesses among words, and is valuable as a means of enabling the pupils to correct for themselves, by a more careful observation, such errors as they may make.

For example, a child sees "*on*" on his lesson-sheet, and calls it "*no*." The teacher draws his attention to the word again, and he names it correctly; but that is not enough. The teacher should further ask how the word would have been spelt if it had been "*no*," and the child answers, "*N-O*;" and thus the difference between the words *on* and *no* is established without the need for actually showing the child the two words side by side, as had no doubt already been done at a still earlier stage.

At the later stages of work, also, oral spelling is often useful in dealing with comparison of words; but by that time pupils spell orally because **they can write the words**. They spell, as it were, by reading off the visual picture which they can form mentally, either of the printed or the written word. But this, again, is something different from a formal spelling lesson.

Oral spelling, however, is still misused by some teachers as a means of formally teaching to spell. Young classes are made to spend useless and dreary hours in the simultaneous and unmusical chant of "*c-a-t, cat; c-a-t, cat; c-a-t, cat*"—an exercise which can be productive of little good and less pleasure. It might be of some service if the pupils were to do all their

writing by a type-writing machine, where the work is not visible; but since we look at our words as a whole, as a picture for the eye, and aim at such fluency of writing that we scarcely think of the separate letters at all as we write, a less efficient method would be hard to find.

The time thus wasted would be more effectively spent by the teacher in writing on the blackboard the words to be studied, and by the children in copying them on slates; for at this early stage transcribing direct from the book presents too many difficulties, and distracts attention from the one point to be thought of—the *spelling* of the word.

### Incidental Teaching of Spelling.

Children learn unconsciously to spell by practice in reading. The common words are so often presented to the eye that the pupils carry away unconsciously a mental picture of them. We do not usually give spelling lessons in French or in Latin when teaching these languages, but take it for granted that the children will observe and remember the spelling of the word by carefully looking at it. The same process goes on in the reading of English. And it will be carried on all the more surely when the new words that occur in the reading lessons are not pronounced by the teacher as patterns for the children, but attacked by them on their own initiative. Good teaching in reading is productive of power to spell; the best readers in a class are usually the most correct spellers also.

### Transcription Exercises.

There is an intermediate step between seeing a printed word and writing down such a word. The character we use in writing differs from the printed character. Exercises in transcription are useful, not only in fixing the spelling of words, but in translating the printed into the written character, which in young classes forms a real difficulty. Such exercises are necessary to familiarize the pupils with the look of the word in its written form, and for this reason they are preferable to even the simplest form of dictation, in so far as they make no call on the memory, but leave all the mental energies free to be concentrated on the one point aimed at.



Transcription exercises thus naturally form the next step after copying from the blackboard the words written by the teacher for study. They may be used at a very early stage in the pupil's progress, and there is much advantage in continuing such practice to a comparatively advanced stage as well.

It is important that the *first* impression of a word should be a correct one, as it is apt to be enduring. If a child writes a word wrong once or twice, the blunder is very apt to recur. After a wrong mental picture has been formed, this has to be eradicated, which is often very difficult. Hence the importance of careful supervision of the exercises in transcribing words, especially new words. Frequent transcription of common words also serves to make the writing of them easy and finally almost automatic.

Transcription is also an exercise which leads to economy of the teacher's time. This is an important point where he has more than one class to teach, or where he adopts the plan—a plan always productive of good—of dividing a large class into several sections so as to secure more individual effort from the pupils. Although a class is able to write from dictation, that is no reason why they should have no practice in the formation of written words except when the teacher is dictating. In many cases also the passage which is transcribed to-day may profitably be used as the dictation exercise to-morrow, especially with young classes.

### Spelling Rules.

With all its irregularities, **our system of spelling does follow certain rules.** No doubt the rules are numerous, and the exceptions to them still more numerous, but the great majority of our words can be arranged into groups for facilitating the systematic teaching of spelling. Much attention is at present being devoted to this matter. It is recognized that words should not be learned merely as they chance to occur in the reading-book, and manuals are coming more into use where words are grouped according to their spelling alone.

This **systematic teaching** should be adopted, for many reasons. Even with the best teaching, essential things are apt to be forgotten by the pupil after they have been learned; and in every subject the teacher must be on the look-out for clues by which a forgotten thing can be recalled to mind. The surest clues for memory are those which depend most on reasoning out from other things, and things are least likely to be forgotten



when they have been shown to be connected with other things by clear principles.

You may clearly impress on a pupil that a certain fact is *so*; but if you wish him to have a trustworthy memory of it, tell him not only *that it is so*, but *why it is so*. If this be impossible or inconvenient, show him *other things* that are so likewise; and failing this, show him some things that are exactly *opposite*, for the memory of contrasts is often little weaker than that of resemblances.

By one or more of these clues—*reason why*, *likeness*, and *unlikeness*—a pupil will grope his way back to the spelling of a forgotten word, even when the mental picture on which we chiefly rely has vanished for the time. And these are the three main principles of classification which will guide the teacher in arranging words for systematic study.

For example, in teaching that the past tense of *bar* requires two *r*'s, the teacher may point out as a reason that the second *r* is added to separate the *a* and the *e*, since *a* and *e* with only one letter between give the long sound of *a*. Then, as a contrast to the word and an example of the rule, he quotes *bared*; while as similar words he may give *marred*, *starred*, etc.; or he may pass from the letter *r* and give other pairs of words, like *fated* and *fatted*, *mated* and *matted*, and so on. Of course, if the word be anomalous, no help is got from the use of similarity, but contrast may be available; while as to reason or rule, that may have to be superseded by some historical fact as to how the common rule has come to be departed from in this particular case.

The teacher must, of course, consult a good spelling manual for the actual rules and outstanding anomalies. And it may be added, that for younger classes the spelling manual should be in the hands of the teacher, not the pupils: the classified examples which he gives them on the blackboard, or from their reading-book, will be more impressive, and certainly more intelligible, than a formal rule. With older pupils the case differs considerably, and the rules as well as the examples may be profitably studied by the pupils.

## DICTATION. ---

### The Use of Dictation.

**H**OW should dictation be taught? The best clue to an answer for a question of this kind is often found by considering first a more fundamental question—

**Why should dictation be taught?** Dictation is one of the steps usually taken in the process of teaching children to write their mother-tongue, to express their thoughts in written language instead of merely in spoken language. The various steps in that process, according to modern practice, are these: **writing** (that is, penmanship), **spelling**, **transcription**, **dictation**, **grammar**, and **composition**. Original composition is the goal aimed at, and the other exercises are means to that end.

It is an error to regard the dictation exercise, then, as merely a means of testing spelling—a view which is too common in practice. It should rather be said that **spelling is a preparation for the dictation exercise**. The pupil has now reached a stage beyond that of writing single words, and has begun to develop the power of dealing with **phrases**. But these phrases are in the meantime **dictated** to him: the reason for this is that practice in writing down phrases supplied to him is the best preparation for writing down the phrases which by-and-by he will have to make for himself before writing them.

### Preparation for the Exercise.

The pupil has now presumably got thoroughly over the difficulty of translating printed into written characters. He has passed the “letter-by-letter” stage, and even the “word-by-word”



stage, of his early transcription exercises. He has now to depend on the mental picture of the words which the sound calls up, and transfer this picture to his slate or paper. This implies that he is able to form a mental picture of all the words dictated to him. How can this ability be secured? Clearly by the careful study of the passage to be dictated.

Dictation without previous preparation is useless for teaching purposes, and it is as a teaching process that we have to consider it here. But unprepared dictation exercises are not merely useless; they are positively hurtful. How is this? It will become clear by considering the process which results in a blunder in this exercise.

A word is dictated which the pupil cannot spell—that is to say, he has no clear mental picture of the word to guide his writing. But he must write something, and he writes down the word wrong. What is the result? He has now obtained from his slate a mental picture of the word in question, but it is a wrong picture. True, the word may be corrected, and the boy may see where he erred; but he has now two conflicting pictures in his mind, the wrong and the right. The teacher must next look for some method of enabling him to distinguish and select the right picture in future whenever the two are suggested by the sound of the word in question. Unfortunately teaching can only attain to **strengthening** the memory of the true; there is no art by which we can ensure **forgetting** the false when once it has been presented to the mind.

The first practical rule then seems to be that **all passages for dictation must be carefully prepared beforehand**. For young classes, the best preparation is that of **transcribing** the passage in full, an exercise which might be performed on the day before the dictation exercise is given. As practice gives increased fluency, a **careful reading** (with silent observation of the spelling) will be sufficient; and at a still more advanced stage attention to the more **difficult and uncommon words** will be all that is needed.

In this exercise it is extremely important to "hasten slowly." The young teacher may be oppressed by the prospect that his class may be tested at the annual inspection by being asked to write any part of any lesson in the book, and he may be tempted to require the preparation of the whole of each day's lesson for this purpose. By doing this he will defeat his own ends. The whole lesson cannot be prepared thoroughly, and only thorough



preparation is of any value. Two or three paragraphs may be as much as he can rely on getting done with absolute accuracy at first; but the power will steadily grow day by day until larger sections can be prescribed. By the time the class comes to a second perusal of the book, the whole lesson is much more familiar, and only the hard words will require special study.

### Errors in Dictation.

The most important point in a dictation exercise is to prevent errors; the next, to correct them. Teachers do not require to be told that errors will occur, even with careful attention to preparation. But if they know **how** these occur, some clue may be found to the best means of correcting them. A boy may make an error from various causes:—

1. He may have **no clear picture** of the word in his mind, and he just writes down "something."

2. He may have a **clear but an erroneous picture**, due to faulty observation of the spelling while preparing the passage, and he carefully writes down the word as he learned it, though not as it should have been learned.

3. He may have a clear and correct picture of the word, but may make a "**slip of the pen**," and write down what he did not mean, without noticing it. This is due to faulty observation of what he is writing, perhaps through fixing his attention on some other part of the phrase.

If the teacher could in each case of error make sure which of these causes has been acting, it would simplify correction; but this is hardly possible. Errors due to the third cause mentioned would require practically no correction; calling the writer's attention to the slip would secure all that is needed. In most cases something more is needed, and the old-fashioned plan of making the pupils refer to their books and **copy out correctly half a dozen times** or more the words misspelt is really a very sound one. But this should **never** be regarded as a **punishment** for making the blunder; it is really the best means of **fixing in the pupil's mind a correct image of the word**, and the repetition of the word

several times is a powerful means of securing permanence in memory.

While errors will occur under any circumstances, their occurrence should always be regarded as exceptional, and not as the general rule. If dictation exercises habitually contain blunders in the majority of a class, there is somewhere a serious fault. Either the pupils are being asked to do too much, or they are careless, and the teacher has failed to secure their hearty co-operation. This may indeed be a result of asking them to do what is beyond them. In any case, time is being wasted. The pupils are being familiarized with wrong instead of right pictures of words, and they are further being demoralized by imperfect work being habitually accepted from them.

### Revision of Exercises.

It is of course absolutely essential that every exercise should be seen by the teacher. This may seem almost a superfluous remark after what has already been said of errors. Yet it is so important that it will bear repetition. This supervision is obviously necessary in order that the teacher may know that the words are correctly written, and also in order that the pupils may give their best attention and care to the exercise. For dictation is one of those exercises which, as has been said, when badly or carelessly done, are really worse than useless.

Classes may be so large that it is difficult and even impossible for the teacher to examine all the exercises. Whenever this happens, the class is so large that effective teaching is difficult or impossible, and not in this subject only. The fact remains that the teacher's personal supervision and review of each exercise are indispensable if the best results are to be obtained. At the slate-writing stage of the pupil's progress the passage dictated is usually so short, and the writing should be so clear, that a single glance will serve to discover a misspelling. In more advanced classes, when large, a useful makeshift is to allow the pupils to correct their own, or each their neighbour's exercise. This should be done in *pencil*, after pens are removed, and only as a preliminary to the teacher's own examination. It is useful as a means of shortening the time necessary for that examination; but if used as a substitute for it, grave danger of a moral kind may be the result.



## How to Dictate.

It is a common fault among young teachers to repeat the phrase dictated several times. Some fall into the habit of unconsciously repeating the words all the time they are being written, half a dozen times or more. This is a mistake. The object is to get the children to **grasp a phrase as a whole, and then write it down.** But they will never put themselves to the trouble of grasping the whole phrase if they can depend on hearing each separate word repeated as soon as they are ready for it. It is also **distracting to the attention**, for they are made to listen in the middle of their writing, which prepares the way for blunders. The teacher is likewise fostering the habit of inattention in his pupils, by **speaking when they need not attend.** The result of this may be that in other lessons also he will have to speak more than once before he secures attention.

In the initiatory stage, it may be necessary occasionally to dictate certain words singly; but little groups of two or three words can be written quite easily by very young children who have made good use of their transcription exercises beforehand, and this forms a much higher type of exercise. But for intermediate and senior classes, if the passage has been prepared, so that there are no unknown words, and if the phrases dictated are of a suitable length, there is no good reason why each phrase should be repeated more than once. Exceptions will of course arise, but the best training will be given by adhering to the rule of dictating each phrase only once.

## Unprepared Dictation.

Unprepared dictation is frequently given as a test exercise in examinations, both to senior classes and to young teachers. This is a totally different use of dictation from that which we have been considering. What we have been discussing is the practice of writing dictated passages as a means of giving **fluency in writing the mother-tongue**, and as a preparation for writing phrases composed by the pupil. But the unprepared dictation exercise is merely a spelling test, or it may be a test

of spelling, writing, and punctuation combined. The teacher may find this exercise a useful one for **discovering what his pupils don't know**, but not for teaching them anything new, except indirectly, in so far as it is followed by a study of words that have been misspelt. As a spelling test, it may be made just as difficult as the examiner chooses, by selecting a passage with a sufficient number of uncommon words; and on this account it is a much more trying test than a composition exercise, where a pupil can usually avoid words which he cannot spell, and substitute others more familiar. But except for purposes of examination the unprepared dictation exercise has no serious value.



## WRITING.

**U**NDER this heading we have to consider writing in the narrower sense, as expressed by the term penmanship. In its wider sense the phrase, "a good writer," means one who writes good English; but in the sense we have to consider here it only means one who writes a good hand.

We have first to determine what we mean by a good hand, or good penmanship; for here, as everywhere else in teaching, our method will depend very much on what we aim at. A clear view of the end will do much to determine the means.

### What Good Writing Is.

The most obvious requirement of writing is that it should be easily read. But to this we must add that it should be easily written. In this busy age we regard writing as one of the useful arts, not as one of the fine arts. The flowing lines and ornamental curves of a past generation have fallen into disuse, to the regret of some, no doubt, but to the substantial advantage of many. Ornamental or artistic effects in penmanship had their value, just as ornamental and artistic effects in printing—illuminated borders and initials, hand-made paper, elaborate bindings, and the like. But these things are luxuries, and lie beyond our province.

Regarding writing then from the point of view of its practical usefulness, second only to actual speech, the first requisite is that it should be easily read. If this were the only requisite, a form of letter like that of our printed character would be the best. But the second requirement is that it should be easily written, and this can be met only by a continuous or current

hand. The style we adopt must in some way combine these two requirements.

As to slope, something approaching the vertical meets both necessities—ease in writing and in reading. A strong case has been made out in favour of writing which is exactly vertical, and many teachers prefer this.

But the term “vertical” can only apply to the down-strokes, and in current hand only half of our strokes are down-strokes; the upward lines must have a certain slope. It seems therefore a matter of little consequence whether the down-strokes are exactly vertical, or only so near the vertical as to be easily read. In the drawing lesson there is some difficulty in getting lines drawn exactly vertical, due to the relative position of hand and eye. A slight slope is almost sure to be given to the vertical lines; and this slight degree of inclination which comes so natural does not at all detract from the legibility of writing. Vertical writing is apt to degenerate into *back-hand*, which is disagreeable to the eye of most people; and down-strokes which are perfectly vertical are apt to appear as if they sloped backwards, through contrast with the necessary slope of the up-strokes. But there can be no doubt that the slope of 60° formerly used is both less easy to write and less easy to read than the upright styles now common.

The spacing of letters in a word, and of words in a line, has an important bearing on legibility. The turn which joins the *u* to the *i* in such a word as *fruit* should certainly be wider than the turn which joins the two parts of the *u*. A reasonable space between words is also necessary.

The thickness should not vary too much in the down-strokes and up-strokes. Fine hair-lines and heavy down-strokes increase the difficulty of following the form of the writing with the eye. On the other hand, from the natural movements of the hand it is easier to make the down-stroke somewhat thicker than to avoid doing so, as seems to be aimed at in some new models.

There should be uniformity of style as to size, slope, and other points. The size also should be such as to allow the eye to read easily, and not so large as to waste time in writing.

Neatness, what might even be called elegance, is a material help to legibility, apart from its value otherwise. But this must exclude all ornament, and anything which would lead the atten-



tion of a reader from the words to the style. The beauty must arise from the regularity and firmness of the letters themselves, and not from any added ornament.

### Writing Materials.

For beginners in writing, slates and slate-pencil are almost universally used. This is no doubt on account of their **cheapness**. The slate does not wear out, and can be used an indefinite number of times. Besides, the letters when badly formed can be readily erased, or partly erased and improved. But for many reasons the slate is a very objectionable thing. The surface is hard and unyielding, and disagreeable to handle. Few grown-up people would like to use slates for writing. Then the **ruling** of slates is never satisfactory. Ruling is indispensable as a guide to beginners, and the only serviceable kind of ruling is a grooved line cut into the slate. This forms a trap for the point of the pencil at every turn, and the pupil must either stop short of the line, or have his turns spoilt by the uneven surface he meets there.

The slate was no doubt necessary to avoid expense when paper was a costly material; and probably in many schools it will remain a necessity for the same reason, even with the present low price of paper. But from every other aspect **paper and lead-pencil** are very much more suitable materials for children learning to write. And even the increased cost of the material might be an advantage if it led to more careful superintendence of the exercise. There would be less temptation to set the pupils to do writing merely to keep their fingers out of mischief, as is sometimes done, without much regard being paid to the way in which the writing is performed. As regards the pupil, the knowledge that he could not rub out his blunders would help to make him more careful in observing the form he had to copy. And in such ways as these the writing might gain in quality, though losing somewhat in quantity, by the substitution of paper for slates.

Considerable progress must be made before the lead-pencil or slate-pencil can be laid aside in favour of the pen. For obvious

reasons, it is difficult for a child to manage the sharp steel point, and to use ink without disaster befalling his work.

### Initiatory Stages.

In its earliest stage writing does not differ essentially from drawing. It is a mere imitation of form. Interesting kindergarten exercises may be given on the forms of the printed letters, especially the more regularly shaped capitals, both in stick-laying and in drawing. These may be shaded off into a copying of the easier elements and complete forms in our script character. In every case the teacher first draws the form on the blackboard.

But the use of the blackboard does not necessarily supersede the headline in the pupil's own writing-book. The drawing on the board is most useful in showing *how to draw* the form. The headline keeps the pattern close at hand, and shows it on the proper scale.

After a few lessons on strokes, and single and double turns, the letters may be begun. And this will be found more interesting than the mere elements. The letters will not of course be taught in alphabetic order, but in order of their simplicity of form, beginning with the easy short letters, such as *i, u, n, m, o, a, c, e*, etc., and afterwards taking up the long letters. Considerable practice should be given and fluency attained before taking up the capitals. Their size, as well as their form, will at first present some difficulty.

### Writing Methods.

As for reading, so also for writing, plans and methods have been devised by educational writers and reformers. Some of these have only a historical interest; others are helpful in suggesting points to be studied, even when not adopted in full. Of the former class is **Jacotot's method**, according to which the pupil began not with a single stroke, or a single letter, or even a single word, but with a sentence. This was copied first, and then compared with the model, line by line, by the pupil, under the master's care. Afterwards it was done over again, and yet again, until it was perfectly copied, and finally it was done



from memory. All this was in small hand; large hand came later.

This method is in many ways the direct opposite of what we now practise, always proceeding from the simpler to the more complex. Yet the method had good results, and seemed to stimulate interest by keeping the children employed on the larger unit, the sentence, rather than the smaller, the letter or its elements.

At the opposite pole stands the famous **Mulhäuser method**. On Mulhäuser's plan the letters were analyzed in a very thorough fashion into their **elements**—straight lines, curved lines, loops, and crotchets, and the joining lines into links and hooks. The letters were then arranged into classes, such as "right-line and link letters," "hook, right-line, and link letters," and so on. The copy-books were not only ruled horizontally, for the heights of the letters, but diagonally at an angle of 60° as well, so as to give the correct slope and the width of the various letters or parts of letters.

The system as a whole would be found too uninteresting, as all methods are which lay much stress on elements rather than completed wholes; but a study of its details cannot but be helpful, from its minute attention to all the points that go to constitute good writing.

An older method, recommended by **Locke**, but mentioned many centuries before by **Quintilian**, is that of **tracing** the form of the letters, and requiring the pupil to write over this tracing. This plan is followed, in one form or other, in most schools. It is adopted in the early numbers of all engraved copy-books. If such copy-books are not used, pencil tracing by the teacher is usually necessary in addition to the copy set on the blackboard. Nor should this plan be confined to the earlier stages of writing. The teacher may find a pencil tracing very useful for helping backward pupils also at a much later stage, especially those whose eye has a somewhat weak appreciation of form.

The reason for the success of this method is plain. Copying the form of a letter presents two distinct difficulties to a child. There is first the observation of the form to be copied. But there is, in the second place, a worse task—getting the hand to guide the pencil or pen in making the intended form. The training of the hand is more difficult than the

training of the eye. The child knows the shape he means to make the letter, but the result is not always what he intended.

When the copy alone is given, say on the blackboard, to be imitated by the pupils, the eye must be regarded as the guide to the hand. The hand is trained through the eye. But when, in addition to this blackboard pattern, given to show *how* the letter should be formed, there is also a faint outline of the letter for the pupil to follow, his hand has a more powerful guide. He has not now to imagine the shape and then make it. He has simply to keep his pencil on the traced lines, and the thing is done. He learns how to make the form by *doing* it rather than by *imagining* it.

### Copy-Books.

Much diversity of opinion exists as to the best form of copy-book to use. The question most in debate is, **whether books with engraved headlines** should be used, or **blank books**, the copy being set on the blackboard.

The advantages of setting the copy on the blackboard may be summarized as these:—

1. The whole class is working together, and collective teaching is made possible.
2. Any combination of letters or words may be given which the teacher finds necessary, and difficult points can thus receive fuller attention.
3. It is interesting and instructive for the children to see the copy in the process of being written.

Its disadvantages may be stated thus:—

1. The copy is too distant. To follow it closely is a strain on the sight of all, and too much so for many.
2. This accordingly leads to the pupil copying his own writing after the first line has been written.
3. The distance, and the difference in size, prevent any accurate and detailed comparison of the writing with the pattern.

The *advantages* of the engraved headline are suggested by the *objections* to the blackboard scheme, and its disadvantages by the beneficial points of that scheme, as stated above. The pattern is near, perfectly formed, and admits of easy comparison. The only serious drawback is that a class is often found writing each at a different point in his book, and class-teaching is made impossible.

Since there are admitted advantages in both schemes, it would seem to be wise to **combine the two**, and thus secure all possible aids in teaching. At the same time, such a combination may be found to avoid or remedy the weak points of each separate plan.



### Collective Teaching.

Class teaching or collective teaching is certainly indispensable. How, then, can this be secured when using engraved copy-books, seeing that some pupils write more rapidly than others, and that some are certain to be occasionally absent and so to fall behind the class? The plain answer is—keep the class together in their writing-books exactly as you do in their reading-books. The few fast writers must wait for the main body of the class. Those who have been absent must pass the headline done in their absence, and begin the lesson for the day along with their class-mates. It is surely better that one pupil should leave unused the one-twelfth or one-twenty-fourth of a pennyworth of paper than that the teacher should give up the proper teaching of his class. And if the pupil carries home his book when finished, the blank page or two may serve as an object lesson to those at home, and show by a graphic method what loss is caused by absence in at least one subject of instruction.

### Use of the Blackboard.

Supposing, then, that the teacher has taken this very simple means of making collective teaching possible in his writing-books as well as in his other text-books, the lesson will naturally begin with the blackboard. For it must be clearly borne in mind that the use of the head-line is not to supersede the demonstration on the blackboard, but to render it more effective. The lesson for the day is first to be looked at, carefully and in detail, under the teacher's guidance. Points of difficulty are to be specially noted, and illustrated on the board. If necessary (as it always is with young pupils), the whole line will be written on the board, that the children may secure the stimulus of interest by seeing the thing done. They then proceed to do it for themselves, but without strain of eye or distraction of attention, for the copy is before them. When one word, or one line—no more—is finished (or it may be only the capital letter at the beginning), the teacher makes a rapid examination of the work of the class or part of the class, and common errors have next

to be dealt with on the board, by illustration and correction. The writing is then resumed, but carried no further than the end of the line, or whatever point may be intimated. During the course of the writing the teacher passes round unobtrusively, and has the opportunity of pointing out individual errors. His more backward pupils are of course placed where they can receive special supervision.

The use of the lead-pencil by the teacher is helpful, not only for calling attention to weak points, but for the purpose of writing a few letters which are difficult for any pupil, to be traced over in ink by the pupil himself afterwards.

### Size of Writing.

For beginners, that size of writing is best which is **large enough for the proper teaching of form, but not too large for the hand to trace easily.** These conditions seem to be best fulfilled by a size fully larger than what is usually known as half-text. The old text-hand, or large-hand, is certainly too large for young children. Small-hand, again, is too small for the effective teaching of form.

When the elements of form are well grasped, and the time comes when the pupil is to make some practical use of his power to write, as in transcription or dictation, a good bold size of small-hand or round-hand should be used. The form of the letter should be the same in both sizes, and only the size should be changed. It is quite useless to teach two forms for *l* or *h*, one for large and the other for small hand. At this intermediate stage the double ruling of the paper should still be continued, until the difficulty of the altered size has been mastered. But by the time, say, that Standard IV. has been reached, only the single line should be necessary.

### Unruled Paper.

When the highest class is reached, writing should be practised on **plain, unruled paper.** This is by no means so common as it should be, but wherever it is done it is of the greatest value. And in this connection it may be mentioned that the



size of the writing in the highest classes should be that commonly used in business. Children in the highest standards are taught letter-writing as an introduction to practical life, and as an application of what they learn in school to the actual needs of life. It is absurd that these letters should always be written on ruled foolscap instead of on plain notepaper, such as they will certainly use after leaving school; and it is also absurd that they should use a hand so large that their foolscap page will often hold little more than a business man would write on a post-card. In this, as in every subject of school work, the practical and useful should be kept in view.

All school work is apt to be too much divorced from the practical needs of everyday life, and thus to become unreal and useless. Perhaps one reason why the work done in school has so little influence when the pupil begins his life-work is this, that the necessities of that life-work which lay before him did not have sufficient influence in moulding and adapting the teaching he received in school.

### Posture in Writing.

The teacher should attend carefully to the posture of his pupils in beginning the writing lesson. In order to make possible a proper posture, the height of desk and seat, and the nearness of the seat to the desk, must be properly calculated. The pupil must not require to lean forward on the desk, or to sit on the front edge of the seat in order to reach it. The height of the desk should be such that the whole fore-arm lies easily upon it, while the elbow is close to the side. Children have often to lean forward in order to reach the desk, and then to spread out their arms in order to let their elbows rest on it. Both habits are hurtful to the writing, and may be so to the health of the pupil.

The pupil should sit comfortably, upright, facing the desk, not turning his side to it, as is often recommended. His copy should lie so as to be in front of his right arm. His head should not be bent down too far, and not turned sideways or in any awkward position. Many children are allowed to acquire awkward or ungainly habits, which they never get quite clear of, when earnestly wrestling with the first difficulties of writing.

The manner of holding the pen is less important from the point of view of health, but equally important as regards the style of writing. The first two fingers of the hand must be used along with the thumb. This throws the work on the strongest part of the hand, and so lays the foundation of a bold, firm style. It also gives the pupil the power of being able to write rapidly, and for a lengthened period if necessary, without fatigue. Cramped writing is usually due to an attempt to throw the work on a part of the hand which is unsuited for it, such as the forefinger alone.

The hand should rest lightly on the third and fourth fingers; the side of the hand must not touch the paper. For beginners, and in slow writing, the ball of the hand, at the side which forms the continuation of the fourth finger, also forms a convenient rest on the paper. But in rapid and current writing only the fore-arm near the elbow, and the third and fourth fingers, touch the desk or paper.

The position of the hand should receive much attention from young teachers, but it frequently appears that they do not always practise as they ought to teach in this matter. It has even been noticed that at a large collective examination of pupil-teachers, drawn from more than one county, barely ten per cent. were writing with two fingers on the pen.

The proper position of the hand will secure the proper position of the pen. It should point to the top of the page, not diagonally across it, as happens when the hand is laid too much over on the side. This avoids ragged edges in the down-stroke, and secures that the thick part of the stroke shall be in the vertical portion of each letter and not in the turn.

### Common Faults.

There is perhaps no fault in writing more common than that of laying the hand over on the side, and thus writing with the side of the pen. In rapid writing this leads to all upper turns becoming angular, and lower turns too wide and thick. By-and-by a stage is reached when turns disappear from the top entirely, and *m*, *n*, *u*, and *i*, when written consecutively, cannot by any means be disentangled from one another.



So far has this gone that pens have been specially made to meet this defect, having their points cut diagonally, so that they have one point longer than the other. They are no doubt useful to many, just as spectacles are, but the teacher should try to avoid all that would render necessary either the one help or the other.

A very common fault in writing is **defective joinings**. In the more modern systems of writing this is avoided by making the writing continuous from one end of a word to the other. The pen is never to be lifted in writing a word. This is certainly wise, if our school-hand is to develop into a current-hand.

**Irregular thickness** in the down-stroke, or making all the weight of the hand fall on one part of it, is also to be avoided. It is often due to an attempt to make the down-strokes too thick. Another fault to be avoided is **excessive length** of the long letters. This becomes a source of difficulty in reading what is written, especially in the writing of the higher classes.

**Irregularity of size**, whether of long or short letters, is sometimes due to dispensing too early with the double-ruled guiding lines.

Another fault which has developed in the teaching of modern systems of handwriting is the **crowding together** of the parts of a letter, and excessive space between the letters. The letter *m* is one which is frequently badly formed in this way. Wide spacing between letters is useful only when it aids legibility; when carried further, it becomes a fault.

These and all other undesirable features are best avoided by the one simple plan of forming a very definite idea of **what is to be aimed at**. The more simple and definite the pattern the better. And if the teaching is thoroughly done, this pattern will be followed by **every child**. In a class where writing is well taught all the children write alike or very nearly so. Bad writers do not exist. It is only recently that so much could be said, but it is no exaggeration to say so at present, the reason being that most teachers have now adopted a form of writing which is within the reach of all. The fine "copper-plate" style was hopelessly beyond the reach of most children, and accordingly most children gave up trying to reach it. Hence arose all varieties of style, many of them very objectionable ones.

But given a simple form, nearly upright, and easily and firmly drawn, without flourish, fine hair-lines, or other decorative features, practical uniformity is easily attained by means of thorough class-teaching.

At the same time, copy-books should be selected where the form, though simple, is clearly and finely engraved. In the attempt to present a style which can be easily imitated, some copies have recently been produced where the engraving cannot be said to represent good writing, and where the lines are much too thick and clumsy to present a good model for cultivating neatness of execution. These should certainly be avoided in the interests of good training.

Writing is in most schools the best-taught subject of the curriculum. It is of course the easiest, if we take it in the narrow sense of penmanship; and technically, according to the Code, it is not a "subject" at all in that sense, but only part of one. But there is one point which makes perfect writing worth aiming at besides the actual result in penmanship. It is a thoroughly practical subject; it is a species of manual training; and as such it cultivates care, neatness, and other practical virtues in a very high degree.



## COMPOSITION.

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### Relation to Other Subjects.

**T**HIS is the point to which our teaching in several other subjects may be regarded as directly leading up—**penmanship, spelling, dictation, and grammar.** It is intimately connected with each of these, and its success depends upon the quality of our teaching in them. But for convenience and clearness it may here be treated separately.

**Composition and grammar must be taught together.** Any attempt to separate them will lead to failure in both. There are no doubt a small number of children in our schools who may be safely told to write as they speak, without any formal application of the rules of grammar to guide their constructions. But in the case of the great majority of children, the habit of writing as they speak will lead far enough away from writing good English. Not only are models of correctness necessary, but a well-understood criterion to apply to their own productions is also needed.

It is equally necessary that grammar should be taught through composition. The knowledge of how things are made and how they are used is best obtained by practice in making and using them. The power to analyze any construction is most surely reached through the power to construct on a definite plan.

### Oral Answers in Complete Sentences.

A common instruction to young teachers is that, in order to secure good composition in later years, young children should

always be required to answer in complete sentences when under oral examination. There may be some teachers who can carry out this plan successfully, but in general practice it does not work well. It is open to serious objections; and the good result aimed at, even if attained, is by no means worth the price which has to be paid for it.

1. It distracts the attention of the pupil who answers. "One thing at a time" is a fundamental principle in teaching; but according to this system the pupil has not only to think of the substance of his answer, which he would express naturally and correctly in a word or a short phrase; he has also to think of the correct form of sentence in which to embody it.

2. The attention of the class is distracted in a similar way. They have not only to listen to the answer, as a matter of information, but also to observe it as a correct or incorrect form of speech.

3. Time also is frittered away. The smart and telling exchange of question and answer which is so stimulating to intelligence becomes impossible; and in the time available for oral questioning there is less done, and done less effectively.

4. The teacher's attention is distracted most of all. He is handicapped by having to conduct a lesson, or a series of corrections, on points of grammar, while his whole energy is required to choose the best line of explanation and illustration of the subject in hand.

In general oral teaching, when the subject has no relation to grammar, it should be enough to correct *wrong* forms of expression, and that very lightly and informally, so as to give no interruption to the course of the lesson. And even these errors, if not serious, it may often be wise to ignore at the time they occur; children's thoughts are only too ready to wander off into side tracks. The thorough concentration of thinking on the matter in hand is in itself a difficult enough task.

School-boys, in former days, used sometimes to lay a trap for one another by asking such a question as, "Should you say, '3 times 3 is 6,' or '3 times 3 are 6?'" and the unwary frequently fell into the trap by thinking so intently on his verbs that he forgot that the product of 3



times 3 is not 6, but 9. Now this is precisely the kind of confusion which follows, to a greater or less degree, when the substance of an answer and its grammatical form are both at once presented to the mind of a child. Each obscures the other.

If you ask, "Who was the American leader during the War of Independence?" it is surely pedantic and absurd to require the answer, "The American leader during the War of Independence was George Washington." It is even doubtful whether that form of answer is correct; most educated people would consider the simple name "George Washington" a full answer to such a question; and the rules of grammar are only a statement of the habits of speech used by educated people. If the lesson is one on composition, with Washington's career as subject, then such a question may be asked for the express purpose of suggesting a sentence which will form part of the essay or sketch. But the teacher should make up his mind whether the lesson is on George Washington's life, or on the *writing of a short account* of his life, and then both questions and answers should lead as directly as possible to the point aimed at, and should not attempt to combine two unrelated aims. A complete answer is essential, but it need not be a grammatically complete sentence. In rapid oral questioning on such a subject as mental arithmetic, the absurdity of insisting on grammatical sentences is so obvious as to be apparent at a glance.

### Sentence-Building.

After children have had some preliminary exercise in supplying suitable predicates for given subjects, and subjects for given predicates, one of the most useful exercises for young classes—say Standard II., or even I.—may be described as **sentence-building**; that is to say, the children are required **not merely to make up a short sentence, but to use that sentence as the foundation of a longer one.** A short simple sentence is to be taken as the basis, and this is to be expanded as far as required. By this means the **unity of the sentence** is kept before the pupils, and the fact is learned that a long sentence is merely a short one with certain expansions. This kind of exercise is, of course, to be conducted orally, but with the help of the black-board.

In beginning such a lesson, the teacher asks for a subject to make a sentence about, and gets such a word as "ship." He next asks a suitable predicate, and the sentence stands, "The ship was wrecked." This may be written on the board, with a bold vertical line between the subject and the predicate. Dealing with the subject first, he asks for words which will tell something more about the ship, and gets such words as "large."

"iron," "sailing," etc. As each word is supplied, some pupil is called on to repeat the sentence with that word added. By degrees the sentence assumes the various forms—"The ship was wrecked;" "The large ship was wrecked;" "The large iron ship was wrecked," etc. This is necessary to keep up the feeling that the sentence remains a unity while it increases in complexity. Next, the teacher asks for some description which it takes more than one word to express, and some pupils suggest, say, that the ship had been built at Glasgow three years ago. The proper word to join on this statement to "ship" without destroying the original sentence may give trouble to discover, and may have to be supplied. Then passing to the predicate, and suggesting the questions to be answered—when? where? how? in what circumstances? etc.—the teacher gets the class to make up a fairly long statement, but all within the unity of the one original sentence. Each time a suitable or possible addition is made, the whole sentence is repeated, as formerly, and if the teacher prefers it, the words are written in on the blackboard. In the end, the sentence may stand so—"The large—iron—sailing—ship—*Vulcan*—which was built at Glasgow three years ago—was wrecked—yesterday—in the English Channel—while sailing to London—from China—with a cargo of tea." Sentences such as this can be readily built up by pupils in Standard I. or II., and the children take great interest in the process. They do not require to know the technical names of the various members of the sentence as yet, nor should they be required to write it down. The object at present is to give practice in building up sentences, so that they may learn by this practice how a correctly-balanced sentence fits together, and how it rests on its original foundation.

At the present stage errors must be corrected without giving the grammatical principles involved, and words and clauses supplied without the grammatical name of their classes being used. But the form of exercise recommended here has the advantage of giving familiarity with the various types of clauses, so that when the names come to be used, they are seen to be names for things already familiar. And the exercise is also capable of being largely used at a time when written composition is far beyond the pupil's power.

### Sentence-Grouping.

The next stage in teaching composition deals with the **grouping of sentences into paragraphs**. This kind of exercise may also be taken orally, but the use of the blackboard is necessary, in order to show clearly how the composition grows. Such exercises may be based on the reading lesson, as a convenient means



of ensuring that the matter is already familiar. Taking a lesson which has been formerly read and explained—a story or a descriptive lesson—the teacher requires the first pupil to supply an opening sentence, or he may do so himself in order to make an easier start. The narrative is then taken up by each pupil in turn, sentence by sentence. Any faulty sentence is of course to be criticized and amended before taking its place on the blackboard. Special attention will be given to conjunctions, and such faults as the too frequent use of *and* pointed out.

The use of the **paragraph** should form part of the instruction at this stage. It should be regarded as a unit, consisting of **several sentences** closely related and **bearing on the same point**, but dealing only with part of the whole subject of composition. Lessons of an informal nature on punctuation and the use of capitals will naturally accompany this stage.

### Written Composition.

The proper time for the introduction of written composition cannot be prescribed for the teacher. The rules given can only be general. The class must not only have reached **considerable fluency in penmanship and accuracy in spelling**, but they must also have had enough **practice in dictation** to enable them to carry a **whole clause or sentence** in their memory or imagination while writing it down. These requirements may be met in a good Standard III. or an ordinary Standard IV. In any case it would be unwise to leave over the formal written composition exercise to Standard V., where it forms part of the prescribed examination test. In a Third or Fourth Standard an easy exercise of this kind will be found a welcome change from dictation and transcription.

It is possible to reach this stage of composition much earlier. Even in Standard I., good story-telling exercises have been done, and in Standard II. some teachers secure work of this kind that any examiner would pass in V. This is, of course, a matter for the teacher's individual choice, but it is at least doubtful whether the time spent by young classes in reaching this fluency in written speech would not be better spent in more realistic work, of the nature of kindergarten or hand-training exercises. Still the fact that such results have been

reached shows that there is no reason for postponing the practice of composition to the stage where it is required by the Code—at least there is no reason in the nature of the subject itself for doing so.

The first practice of written composition will naturally be made when the teaching has reached the sentence-grouping stage described in last section. After the subject has been dealt with as there described, **written down sentence by sentence on the blackboard** from the pupil's dictation, each sentence scrutinized, and their connection clearly understood, **the board should be removed or reversed** so that the composition is no longer in view of the class. The pupils then take paper and pens or pencils, and proceed to **write down for themselves** the same story or description. At first the actual words used on the board may be reproduced as far as possible, and in any case the order of the sentences and their arrangement into paragraphs should be closely adhered to.

Even when teachers postpone written composition till Standard V. is reached, this plan of having the subject gone over sentence by sentence by the pupils, and written on the board, will be found useful, if not indispensable at first. But unless preliminary oral exercises have been given, it will be practised under great disadvantages.

### Connection with Grammar Teaching.

In Standard V., sentence-making should no longer be guided merely by imitation. At earlier stages, the pupils must naturally follow the models given in their books, or supplied by the teacher, to correct their own errors. But by the time this stage is reached, and probably much earlier, the **grammatical rules bearing on the structure of sentences** begin to be of **practical use**. The children should be required to apply these rules to the sentences they write, especially when those sentences are somewhat long or involved. They have thus a criterion by which to discover any incompleteness or error.

If this be intelligently done, it will abolish the common sentence of this type: "A man who was walking along a road one day. He came to a house, etc." This superfluous *who* is perhaps the most common type of blunder in story-telling composition exercises, and wherever it occurs in a class it usually occurs in a considerable number of the exercises. This indicates that the kind of teaching which avoids it has



been missed by the teacher—the habit of applying the formal principles of sentence construction (or analysis) to the sentences constructed by the pupils.

### Common Difficulties.

The difficulties of teaching composition seem to group themselves round a few typical forms of blunders which refuse to be eradicated. The type mentioned already, the redundant *who*, or incomplete principal clause, is one of the most prominent. The only way of avoiding this is the **closer connection of grammar teaching with composition**, or the use of construction as well as analysis in teaching what is usually called analysis of sentences.

The use of quotation marks is another common difficulty. It can best be got over, like all other difficulties which can be brought under a rule or class, by **systematic exercise on the special point of difficulty**. The teacher must not wait until an example occurs in natural course, but **construct a number of examples** to fix the rule he wishes to have mastered by the class. A sentence should be chosen which can be expressed either as an indirect or a direct quotation. "He said that he was hungry.—He said, 'I am hungry.'" The two forms should be written down on the blackboard and compared. The rule should be given that only direct quotations, the very words uttered, should have the inverted commas. The next step is to give a number of sentences with indirect quotations to be turned into direct, and *vice versa*, with proper punctuation. In this way the rule is remembered, and its application made familiar at the same time. A further lesson may be required on sentences where a parenthetical phrase interrupts the quotation, as in—"Come here," said he; "I wish to speak to you." Before inserting the commas, the class may be required to underline every word quoted directly. This will help to call attention to the distinction between the quoted words and the connecting phrase at first, until practice enables the pupil to insert the proper points with less difficulty.

**Provincialisms and common conversational phrases** are often introduced into the composition exercise. This is in one way

a hopeful symptom, showing that the story told is not merely remembered, but is intelligently grasped, and reproduced with the stamp of the pupil's own mind upon it. Yet such peculiarities are regarded as errors, so far as correct English is concerned, and must be eradicated. Here again **systematic lessons on each recurring point** will have most benefit. Write down the localism and its translation into good English side by side, and draw attention to the grammatical rule underlying the correction. Any plan which makes the teaching easily remembered will help. The worst possible plan, if indeed it can be called a plan at all, is that of merely attending to the error as it chances to occur.

Other difficulties, such as the placing of full stops, and using too long or too short sentences, only occur when the preliminary oral and blackboard teaching has been too scanty or has been entirely omitted. Such points show a want of grasp of the idea of a sentence, which can only be supplied by "beginning at the beginning."

### Essay-Writing.

The pupil now reaches a stage where a new difficulty has to be faced—he **must supply the matter** as well as the form of the exercise for himself. In other respects, this stage of composition is sometimes easier than the preceding, and it has one obvious advantage from the pupil's point of view—he can now avoid most words regarding whose spelling he is uncertain. This was impossible in dictation, and not always possible in story-writing.

The mention of this new difficulty at once suggests the best way of surmounting it. **The writing of the essay should be prefaced by an oral discussion of the subject**, which will be arranged by the teacher in the order in which the various points should be taken up. In this way beginners will be helped gradually over the two difficulties of all essay-writing—**matter and arrangement**.

### Matter.

The first difficulty, matter, is the more easily dealt with. **Any subject already studied in school may form the subject**



of an essay—oral lessons in science, reading lessons, geography or history lessons, or any others—and the previous study of the subject will ensure its being familiar to the class. There are, again, a wide range of subjects about which every pupil is able to write, at least from his own point of view, without special preparation. It is only in a small minority of cases that the pupil's essay will prove a failure through absolute ignorance of the subject. From one point of view, it may be said that the pupil is now merely doing in writing what he has all along been doing orally in answer to questions—telling what he knows or thinks about the thousand and one subjects of interest that receive attention in the course of school work. It is not what to say but how to say it that forms his great difficulty.

### Arrangement.

Most essays, not only from pupils, but, it must be confessed, from young teachers as well, show weakness in the matter of **arrangement**. In many essays the sentences would read quite as well in any order other than that in which they happen to stand. This tendency to hap-hazard arrangement can only be met by systematic teaching.

Much may be done by a clear understanding of the **function of the paragraph**. A story, such as that usually given to Standard V., is generally contained in one paragraph, as it deals with only a single incident, or one phase of a subject. But in essay-writing it is different. One can hardly write an essay on any subject without mentioning more than one aspect of it, and each thing or phase discussed must have a separate paragraph.

In order to carry out this fundamental rule, it will be necessary to require the pupils first of all to consider **under what divisions** their discussion of the subject will naturally fall,—to divide their subject, in fact, into a **firstly, secondly, thirdly**, etc., and to give each head its own paragraph.

For example, if the essay is to be on a wild animal, such as the lion, the *first* paragraph will naturally contain a sentence or two of very general description of the animal. The *second* will tell where it is

found. The *third* will discuss the details of its appearance and structure. The *fourth* will deal with its habits. The *fifth* will give any illustrative facts which may be known to the pupil, such as modes of hunting the animal, or the like. For any other wild animal, the same order of paragraphs will serve. If a domestic animal be the subject, a very slight alteration, such as making the last paragraph deal with its "uses," will adapt the scheme to its new subject.

In dealing with a different class of subject, say, a historical event, a scheme of this nature may be used:—1. A short general explanation in a sentence or two, telling what the event was, and when or where it happened. 2. The events leading up to it, and, possibly as a separate paragraph, the persons who were chiefly concerned. 3. The event itself. 4. Its results. Biographical sketches may generally be arranged in three main divisions:—1. Early life of the individual. 2. Public career or life-work. 3. General estimate of that work in its results. There may be more or less of subdivision of each section necessary in certain cases. Moral subjects are perhaps less easy to subdivide, but should at least have (1) definition, (2) illustration, and (3) general estimate and conclusion drawn from the second part.

In short, every essay should have at least a *beginning*, a *middle*, and an *end*, when seen by the mind's eye as well as by the bodily eye. And these three parts should be so organically connected that no one of them can be substituted for another, or be omitted without loss.

### Schemes of Arrangement.

The wise teacher of this subject will do more than show that a certain class of essay may be treated under a certain number of heads. He will require his class to **make a note of these headings for future use**; and in order to illustrate their use, he will follow up the first essay by several others on kindred subjects. He will then pass to a different class of essay, and in connection with this class he will discuss the best and clearest way to arrange the matter of such an essay. These headings will also be noted for use in any essay on the same class of subject.

By carrying out this plan systematically, in a short time the pupils will have sets of headings or empty pigeon-holes in which to set out their knowledge, available for any ordinary class of essay. For, after all, while the number of possible subjects for composition by children is very large, they may be arranged into a comparatively small number of classes. They will fall into such classes as moral, biographical, historical; description



of wild animal, domestic animal, plant, manufacture, town, river, or district; and the like. And for each of these the pupil is equipped with a scheme of arrangement for his knowledge.

It may seem to those who have not tried a plan like this, or seen it in use, that it is open to the objection of being rigid and repressive of originality. But children's essays are not prescribed for the purpose of giving scope for original and striking ideas. They are designed to teach clearness and correctness of expression, and to exhibit this by the manner in which the pupils state simple facts regarding a given subject. And, besides, there is no reason why very original ideas should not be expressed in the natural order of sequence.

But there is a positive advantage to be found in this systematic treatment, even from the point of view of the thought to be expressed. By taking up one point at a time in natural sequence, ideas are recalled or suggested to the mind when dwelling on that point which might not have been remembered if the mind had been allowed to wander over the field at will. And it at least secures that every important *aspect* of the subject will be suggested to the writer's mind.

### Letter-Writing.

Letters should also be studied under their different classes—such as **familiar correspondence**, letters of a **more formal type**, and **business communications**. Regarding the first class, little teaching is required beyond the proper form of address, date, and close. The chief point to be guarded against may be the tendency of familiarity to develop into flippancy of expression. The teacher must try to cultivate the feeling for propriety of expression combined with informality. In the second and third classes there are more points which require formal treatment; and in the third class especially a list of technical expressions should be made and studied, and used in their proper connections.

There is a class of exercise sometimes given under the head of letter-writing—namely, to write a letter *on a given subject*. This is a kind of letter which is of little practical use. It is merely an essay fitted out with the head and tail of a letter. The teacher or examiner who gives such an exercise would do better to say honestly, "Write an essay on such and such a subject, and show how you would begin and end a letter of such and such a class."

It requires considerable ingenuity sometimes to devise good types of exercise in this kind of composition. The teacher should never merely give a subject, but detail fully the supposed circumstances under which

the letter is being written. A very useful exercise in letter-writing is to give the pupils a business letter on the blackboard, which they are to answer in a certain character, or of which merely to acknowledge receipt.

In any exercise of this nature, the actual needs of everyday life should be the point to keep steadily in view. For example, the habit of always writing letters on ruled foolscap is an absurd one. Unruled notepaper is much more likely to be used for letter-writing after the pupils leave school. The size of penmanship should also be adapted to this form of paper; much of our school writing would give an average of only two words to a line. Practice in letter-writing should include some practice in addressing envelopes, as this is rarely well done by those whose correspondence is limited; and it may be added that a little practice in closing envelopes neatly would also be of some practical use.

### Revision of Exercises.

A difficulty mentioned under Dictation has here to be mentioned again—the difficulty of **personal revision of all exercises by the teacher**. The difficulty here, however, is much more serious. In writing dictation there is only **one correct way** of rendering the passage, and this way can be presented to the whole class at once, either on the blackboard or in their books. But in composition there may be as **many correct ways** of performing the exercises as there are pupils in the class, and there may be at least as many wrong ways of doing so. Pupils can no longer correct their own or their companions' exercises to save time. The whole must be done by the teacher. Time may be saved by securing the services of a reliable pupil-teacher—one whose power of composition qualifies him for such work—to read the exercises and put aside those containing no error of any sort, while he marks in a general way all points needing attention in the others. But for effective work all exercises must be read by the class teacher. It is only by doing so that he knows thoroughly how far his teaching is effective, and what weaknesses are prevalent and demand special care. And if the class is too large for the thorough teaching of composition, there is considerable reason to suspect that it is too large for the most effective teaching in other subjects as well.



## GRAMMAR.

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### Grammar as a Common School Subject.

GRAMMAR has frequently been called upon to justify its existence as a subject of common school study, and more than one writer has proclaimed its unfitness for a place in our curriculum. Many of the objections urged against it are due to misapprehension, and seem to be founded on the assumption that any subject which can be badly taught should be abolished, instead of being taught on an intelligent plan. Other objections may be summed up in the general statement that the time might be more profitably spent on other subjects; and this may be granted, at least as regards certain classes of schools; if our whole education is to prepare directly for wage-earning and that alone. But the teacher who magnifies his office, and looks upon mind-training as somewhat of intrinsic value, finds in the study of grammar the most valuable instrument of his craft. The question as to the value of grammar in the elementary school is best answered by a few visits paid to the schools of such teachers.

The question has also been raised as to the **age at which grammar teaching should begin**. This age has been fixed by two eminent authorities recently at ten and eleven years respectively. If grammar is meant in all its completeness as a science of language, the age might be raised by almost another ten years. But no teacher need wait even till his pupils are ten before he begins to make use of grammar in an informal way to aid in his teaching of language. There are hundreds of occasions in the teaching of the spelling, accent, and pronunciation

of words, and in the explanation, intelligent reading, and oral construction of sentences, where such terms as noun or verb, singular or plural, past or present, subject or predicate, can be employed with propriety and effect and much saving of valuable time. These terms have a meaning which is not beyond the grasp of, say, a Second Standard class, while they have also no doubt a deeper meaning which extends beyond the scope of any part of common school work.

### Uses of Grammar.

Grammar has been described as **both a science and an art**, and in school it must rank as both. As a science, it is susceptible of such treatment by the teacher as to make it rank educationally above the physical sciences in many ways. The materials are always at hand. They afford the fullest scope for observation, comparison, classification, induction, and deduction. And these processes may be carried on in the most elementary or the most thorough-going way, according to the age and intelligence of the class. As an art, grammar finds daily use in the correction of the pupil's written and spoken language, and in aiding the formation of a purer style.

### Order of Teaching.

Grammar was formerly said to begin with Orthography, or the spelling of words, and to end with Prosody, or the rules of versification. But in modern usage the intermediate parts of **Etymology and Syntax** are treated as the essentials of grammar.

Presumably, those who object to grammar as a subject of school instruction do not object to the study of spelling. But if written language is to be taught in school at all, we must have not only words studied in their elements, the letters, but also words in their combinations, as sentences.

Etymology and syntax, then, are what the teacher must face, or, to use our modern terms, **parsing and analysis**. The question is sometimes asked whether analysis or parsing should be taught first. As a matter of fact, **they cannot be taught separately**; and it is really immaterial which the teacher begins



with, seeing that barely a single step can be made in either subject without the help of the other.

Single words, and phrases or clauses, have often precisely similar functions in a sentence, and may be interchanged one with another. Whatever description is applied to the one will apply to the other. Analysis is only a parsing of phrases. In parsing, again, "case" can only be explained from a knowledge of analysis; while analysis is impossible without a knowledge of the parts of speech. The two sides can only be taught in conjunction.

### Initiatory Steps.

One of the simplest ways of directing the pupil's attention to the study of grammar, is to present to his observation some outstanding fact about the words he is reading; such as the fact that certain of them are "name-words," or nouns, and that others are "doing-words," or verbs. By the simple exercise of looking out for the name-words in his lesson, he is learning the fundamental principle in all grammar teaching—that **words have different functions**, according to which we arrange them into different classes, or "parts of speech."

But these functions, again, are only seen in the sentence, and so the elementary notions about a sentence must come in very early, as the second, if not the first, step in the teaching.

### Definitions.

It is unwise in the early stages of grammar teaching to attempt a full definition of the various parts of speech. It will usually be found that pupils know their functions better than they can define them; and many of the definitions given in elementary text-books are misleading.

Thus, a noun is sometimes defined as "the name of a person, place, animal, or thing." But either the word *thing* is wide enough to include person, place, animal, and every-thing else, or it is so narrow that the definition will not cover all the nouns we use. It is quite enough to say that the noun is a name. This is really the useful part of the definition, which the pupils find good enough for a working description; the remainder is only for the purpose of show, and professes a completeness which it fails to reach.

### Importance of Function.

Whether in parsing or in analysis, whether in dealing with single words or with clauses, **all the teaching must turn on the function of the word or clause.** What the word does settles what it is. The word which is a noun in one sentence may appear as a verb in another, and as an adjective in a third. From a very early stage the teacher should make or select sentences to illustrate this, and so impress upon the pupils that the mere sound or spelling of the word gives no clue to its grammatical classification. And the next step, in order to clinch the lesson by practice, must always be to get the pupils to **construct** sentences with the word in its several uses as prescribed.

And as with words, so with clauses. No error is more common than that of describing a clause by merely glancing at the conjunction which introduces it. But by examples it should be shown that "that," for example, may introduce four different kinds of clause, "when," three different kinds, and so on. Only the knowledge of what the clause does can enable us to describe or classify it.

### General Cautions.

Great care must be taken to **avoid the confusion between the word and the thing signified**, a confusion which careless phraseology is apt to engender in grammar teaching.

For example, you ask a class, "Is *book* a noun?"—"Yes." "Is this a noun?" you continue, holding up a book. Too often the answer again is "Yes." This confusion is caused by the careless statements which one often hears a young teacher make, such as, "A noun is anything you can see or feel," and the like.

Again, the adjective is sometimes described as a word that "tells some quality of a noun." In technical language, it *qualifies* the noun; but it tells the quality, not of the noun, but of the *thing signified* by the noun. The verb, again, does *not* "tell what the noun does," as is too often said; it tells what is done by the thing signified by the noun.

However incomplete and provisional may be the definitions and descriptions which the class is able to use, they should be correct so far as they go, and never misleading.

Another caution is necessary, especially in view of the **hard and fast divisions** of this subject sometimes prescribed for the



work of succeeding years or standards. Whatever be the amount professed in the syllabus of work, **that amount can only be taught by teaching something more.** If the teacher aims at teaching nouns only, this cannot be done intelligently until the class knows when any given word is a noun, and also when it is a verb or an adjective. So the adverb cannot be taught without a knowledge of the preposition as well. Parsing cannot be taught without elementary analysis added. In analysis, again, the object cannot be firmly grasped without a knowledge of the nominative complement and other members of the predicate. The limits which mark off the various stages are merely conventional and arbitrary, and intelligent working up to any limit always implies something beyond that limit.

### **The Parts of Speech—The Noun.**

It is impossible in the limits of this manual to go fully into the teaching of all the parts of speech, but some remarks chiefly on the noun and the verb may be given as an example of how the subject should be dealt with, since these are in many ways the most important classes of words.

The first step in grammar teaching may be described as designed to **show that there are different classes of words, having distinct functions.** Naturally the teacher begins with words which are names of things. The first stage of this exercise will be to recognize such words as they occur, and to supply orally or write down names of different classes of things.

Immediately following on this (or, according to the preference of many teachers, preceding this) comes the pupil's introduction to the sentence. It is naturally connected with the noun, since we usually name a thing only when we have something to say about it—that is, a sentence to make. So the simplest use of the name-word is as **subject of a sentence.** Exercises on the construction of simple sentences, with the subjects given, can be done very early, and will make the teaching of the noun sure and memorable.

One of the first real difficulties which the teacher has to face is the fact that a given word is not always used as a noun.

This difficulty had better be postponed until the class has formed an elementary idea of the adjective and the verb. When the pupil has a general conception of these classes of words, he must learn the fundamental and all-important lesson that the **function of a word determines its class**. Its character, like our own, depends not on what it looks like, but on what it does.

A very liberal allowance of exercises dealing with this point is necessary. These should not only take the form of disentangling noun, adjective, and verb in specially constructed sentences, but more especially of **composition** exercises. The children should be ready to illustrate the use of any ordinary word as different parts of speech when required.

It is perhaps just at this point that the skilful and the unskilful teachers of grammar part company. The power of illustrating by a concrete example some point of grammar is only developed when grammar is well taught, and it is a power which should be more cultivated by teachers. It is only through practice that theory is understood. To neglect the practical and constructive is therefore to miss even the lower aim of understanding the theory. The pupil who has been taught to join the two sides from the early stages acquires not only an understanding of his mother-tongue in its grammatical principles, but a mastery over it in practice. The pupil who has received instruction by theory alone acquires but little of the one and none of the other.

The distinctions of the **various classes of nouns** may be understood very early if skilfully dealt with. Only the two classes, proper and common, should be attempted at the present stage. The distinction of proper and common nouns may be introduced in this way. The teacher selects a group of words, such as *Carlo, collie, dog, animal*, etc., all of which can be applied to a certain quadruped. But only one of these is really **his name—Carlo**. All the other words tell **what kind of a thing** or creature he is: he is one of the kind of things we call *animals*, and one of the kind of animals we call *dogs*, and one of the kind of dogs we call *collies*. But the name of this particular collie is *Carlo*. Again, suppose you meet a person: you know the person to be a man or a woman, a boy or a girl. These words express the kind or class of person; but you may not know the **person's name**, if he or she chance to be a stranger.

By such examples as these the point is impressed on the class



that all nouns are not names in the same sense. There are names which express the kind of thing, and there are others which belong to some one individual. The latter are in a sense the individual's own property, hence **proper nouns**. The teaching should be made as practical and even personal as possible. Show a certain boy, for example, that while John Smith is *his* own name, boy is not *his* name; it is *a* name which he has the use of in common with other boys.

A common fault with young teachers is to lay too much stress on the fact that we usually write or print proper nouns with a capital letter. When the class is asked why they call a certain noun a proper noun, the answer is apt to be, "Because it has a capital letter." But if the further question is asked, "Can you make *any* noun a proper noun by writing it with a capital letter?" or if the next question is taken from some sentence supplied *orally*, where there are no letters at all, but only sounds, the uselessness of this criterion becomes evident. The teacher must take care to make this clear, if indeed he mentions capitals at all, which he had better avoid at first. It is true that we write a capital *because* the noun is proper, but it cannot also be true that the noun is proper *because* we write it with a capital. And if a class begins to rely on this mark for determining whether nouns are proper or common, the sooner books are laid aside and oral examples used the better.

Of the inflections of the noun, neither number nor gender will present any difficulty. In dealing with number, the various rules and irregularities encountered should be faced systematically. This study should also be made of practical use in the systematic teaching of spelling, as in the changes of *y*, *f*, and *e* before the *-es* of the plural. Care should be taken that the class is aware of the two senses in which number is used—the ordinary sense of *how many* in speaking of things, and the grammatical sense of an *inflection* of a noun, pronoun, or verb.

Gender is yet easier to teach, being one of the most regular things about the English language. The one point on which error is common is the confusion of gender with sex. The one term applies to **words**, the other to **animals**.

It is no more permissible to speak of persons as masculine and feminine than it would be to speak of words as male and female. When the former terms are applied to persons, it is in a secondary sense, and without reference to sex. We might in this sense describe a woman of a certain type as "masculine," much as we might describe a man as "effeminate."

It should also be remembered that while there are only *two sexes*, there are *three genders*. The discrepancy is explained by the fact that the one term applies to animals and the other to words. It is only in the pronoun that this is clearly seen in English. This makes the difference between sex and gender less easy to grasp than in such a language as Latin, where the names of inanimate objects may be either masculine, feminine, or neuter; or French, where such names must be either masculine or feminine.

In dealing with **case**, the teacher is once more thrown back on **analysis** for the explanation of his parsing—a useful reminder that the two things must be taught together. For nominative and objective we have no guide in the terminations in modern English, so far as nouns go. The case can only be determined by a grasp of the relation of the noun to other words in its phrase or sentence. A useful aid in parsing, however, is the pronoun. Let the pupil try to put “he” or “him” in place of the noun to be parsed, and his knowledge of the spoken language will generally guide him as to which of the two forms should be used; thus he gets a clue to the case of the noun. But this plan does not give the reason why, which is the main thing; it is only mentioned as an occasional test for helping the pupil to verify the conclusion he should arrive at by the proper method. And that method is, as has been said, the relation of the noun to certain other words in the sentence.

One caution is very much needed here in reference to parsing exercises. A pupil should never be allowed to mention the case of a noun as nominative or objective alone. It must always be given as *nominative to something* or *objective by something*; and this because case is not a property of the word itself, but a relation of that word to others. The question “Why?” should frequently be asked regarding other points mentioned in parsing—“Why proper?” “Why singular?” “Why masculine?” and so on, but this question should never need to be asked about case; the reason why should form part of the answer as a matter of course, and the answer is unmeaning without it.

### The Verb.

The verb is in many ways less easy than the noun for the teacher to handle and for the pupil to comprehend. It is so much more abstract and intangible. For this reason a complete and satisfactory definition is not easy to give, or to understand if



given. But abundant practice in sentence-making and sentence-analyzing will make the idea of the verb sufficiently familiar, although difficult to formulate or define. Most of the common definitions of the verb are objectionable, and would be better omitted or left over to a comparatively advanced stage.

The statement that *it tells what a person or a thing does* is only true of the intransitive verb. The transitive verb requires something more to tell what the person does, while the substantive verb is left outside the definition. Again, the statement that the substantive verb tells *what a thing is* is also wrong; another word is required as completion. The "is" in the sentence, "Fire is hot," does not tell what the fire is. The passive voice of a transitive verb is said to tell what a person or a thing *suffers*, which is again very apt to convey to children a totally wrong idea. The more general statement that a verb *affirms* is not likely to convey any useful or definite idea to young children, and would certainly lead them to regard the word *yes* as a typical verb. In a general way the class may be helped by being told that the verb is the affirming word in any affirmation about a thing, or that the verb tells *that* a thing is or does something (not *what* it is or does); but it is certainly true that hundreds of pupils can recognize and can use verbs with perfect accuracy without being able to give any formal definition of a verb.

The different classes of verbs are best taught by reference to the predicate in which it forms the predicative word. The chief forms of predicate may be taken as four in number, and pattern sentences of each of these four kinds should be written down for comparison and contrast. These four forms are—(1) the predicate with the copula or substantive verb followed by a noun or an adjective, the most common type of sentence; (2) the predicate which may be complete in one word, the intransitive verb; (3) the predicate which consists of a verb implying action not affecting the subject alone, the transitive verb; and (4) the predicate where the verb does not express any act of the subject, but an action done to the subject, the passive voice of the transitive verb.

From the first three classes of predicate the three leading classes of verbs may be understood, and illustrated by numerous examples. The nature of the object of the transitive verb, or the objective completion of the predicate, and of the nominative after the substantive verb, or nominative completion of the predicate, must be carefully explained, and made clear by practice at the same time.

In dealing with the fourth class of predicate, where the verb is used in

the passive voice, complete the sentence so as to give the agent or doer of the action—for example, "The book was bought *by the pupil*"—then suggest that as "the pupil" represents the doer of the action, it might be made the subject. After some thought the correct form will be obtained, "The pupil bought the book." Thus the pupils see that such a predicate may be regarded as "a story told from the wrong end," for some purpose such as emphasis, and that in a sense the subject given is not the real subject at all. Next lead to the fact that only transitive verbs, which take an object, can be used in this *reversible* fashion. Since in the typical sentence with a transitive verb the doer is active and the person or thing affected by the action passive, we describe this form of the verb as the *passive* voice. This should be followed up by abundant exercises in turning sentences from the active to the passive form and *vice versa*. This kind of exercise tends to give fluency in composition when that exercise comes to be formally taught.

The distinction of voice when taught in this way is often found to be thoroughly understood by a Third Standard class. If left over until the full parsing of the verb is being taught, it is apt to form a serious difficulty. The reason is that the teacher then tries to teach it mainly by its *form*—the verb *to be*, plus a *past participle*—and finds it very complicated in the teaching. But if taught through its function in the sentence, there is nothing difficult about it, and even young children enjoy the exercise of "telling the story from the other end."

The young teacher should be on his guard against a slovenly method of parsing a verb in the passive voice. He may certainly parse the two words *was* and *bought*, for example, separately; but he should also say what tense, etc., of the passive voice they make up, just as if he were parsing *amati sunt* in his Latin lesson. Although it is a compound tense, it is none the less a tense.

These two points about the verb, the kind or class, and the distinction of voice, are all that is needed for the purpose of sentence-analysis. Such points as mood and tense may be taken up whenever desired. But the two points referred to are necessary before the analysis of the simple sentence can be intelligently performed. They are also necessary to the understanding of the case of nouns and pronouns.

### Prepositions and Conjunctions.

The study of the **preposition** is also necessary to the understanding of case. The preposition should not be studied by first learning a cumbrous definition, and then a list of **prepositions**, as has sometimes been done. It should be taught, like every other part of speech, through its functions,



and these are best seen in the **prepositional phrase**. As this phrase is used generally as an adjective phrase, it may be explained any time after the function of the adjective itself has been mastered.

The **conjunction** is another part of speech which has often been summarily dealt with by lists being learned off by heart. Here, again, function must govern the whole teaching. The **conjunctions which join words** may be taken at any time after the noun has been dealt with, though they are usually left to a comparatively late stage. But the **conjunctions which link subordinate to principal clauses** in a sentence can only be taught in the more advanced parts of the course, when the complex sentence is being studied. The two things must again be studied in relation to each other.

### Relative Pronouns.

The relative pronoun is one of the parts of speech that give trouble to the teacher. The personal pronoun is usually taken soon after the noun, and presents no special difficulty. Its need is at once felt by the pupil, to prevent repetition in such a sentence as, "We met a man, and the man was blind." The pupil will see that this reads smoother in the form, "We met a man, and he was blind." But in introducing the relative pronoun a further step is to be taken. Instead of "and he" the teacher puts "who"—"We met a man who was blind"—and calls the attention of the class to the fact that "who" is equal to "and he." Other examples, requiring "which" or "that," should be similarly dealt with and written down, first in the longer form, with "and he," or "and it," in place of the relative pronoun, and then with "who," "which," or "that." Note next that these words, *who*, *which*, and *that*, are each equal to a **personal pronoun**—that is, equal to a noun—and a **conjunction**. They are therefore **pronouns that join sentences**, and might be called **conjunctive pronouns**, which is the real meaning of relative pronouns. The teacher should next reverse this exercise, and give a number of examples of sentences with relative pronouns to be broken up

into the personal pronoun and the conjunction to which they are equivalent.

The teacher should avoid using the common definition of the relative pronoun—something to the effect that it “relates to a noun which has been used before it, called its antecedent.” In this definition there is nothing to distinguish the relative from the personal pronoun. The personal pronoun also relates to a noun which goes before it, and which is called its antecedent. But what the relative pronoun is distinguished by is this, that it *relates or joins something else to its antecedent*. The word *relates* is used *transitively*, meaning *to establish a relation or connection between two things*. The general fault among young teachers is to make *relates* equal to *refers* simply, which misses the conjunctive function of this kind of pronoun.

### Analysis of Sentences.

It is assumed that the study of the sentence has been proceeding concurrently with the study of words, each throwing light on the other. It may be necessary here to remind the teacher that **analysis is not an end**, but a means to something else—correct composition, along with the logical training implied in the process. Seeing that sentence construction may be studied through **making** as well as through **analyzing** sentences, and that of the two processes the former is intrinsically the more important, it is clear that composing sentences should be a very important part of the so-called analysis lesson.

But the sentence-making must be on a very definite plan; the sentences at first must be literally made to order and made to measure. The exercise is a test, and shows how far the point to be illustrated has been understood. The sentences should each deal with a definite point—such as, at an early stage, sentences containing an adjective or an adverb, or pairs of sentences containing the same verb in the active and in the passive voice, or other points which have been already explained to the class.

When the complex sentence is being studied, attention should be given to the **various conjunctions and their uses**. All the different kinds of clause that may be introduced by *when*, for example, or by *that*, should be examined and tabulated. This will guard against the common error of



describing a clause merely from a glance at the conjunction, and without noting what the clause *does*—the fatal habit of looking at form rather than at function.

The young teacher is sometimes undecided whether the sentences for analysis should be taken at random **from the reading-book** or from the **classified exercises** in the grammar text-book. The habit of taking sentences at random as they happen to come may do well enough as a test of work already done, but it leads to an unmethodical style of teaching, and entails the serious risk of entirely omitting points which are important. For teaching purposes, the teacher must use classified sentences of a type which exactly suits the stage at which his class has arrived. But the ordinary reading lesson should certainly be used as a test of ability to deal with ordinary English, and as a means of revising all the previous instruction received.

### Mode of Answering.

**Independent work** must be secured whether the pupils be employed in parsing or in analyzing. It is too common to hear teachers constantly reminding the various pupils of what parsing consists in, by interjected interrogations, such as, "Gender?" "Number?" "Case?" etc. The pupils should first be taught the order in which these inflections are to be mentioned, and should then be required to mention them in that order. There should be no need for the teacher to say a word, unless to interject a "Why?" when any pupil seems to be answering by rote, even although correctly. It is very important that the children should be frequently called on to give their reason for any statement; otherwise it is almost impossible to keep them from making statements without reason. This remark, of course, applies equally to every subject of instruction, and not to grammar alone.

In analysis also, the pupil must not wait for the teacher to ask for each member of the sentence individually. When he is asked to analyze a sentence orally, he should do so for himself from beginning to end, stating the various members in the

order which the teacher has adopted as the model to be followed. There are various models in common use from which he may select, some equally good, though differing somewhat in plan. But he should avoid any model which contains the blunder of making the subject, the predicate, and the object three separate parts of the sentence. The first lesson a child learns is that a **sentence has two parts**, subject and predicate. And that principle must be adhered to throughout. Every word in a sentence must be regarded as **either part of the subject or part of the predicate**. There is no third division in which it may find a place. While this main principle is observed, the mode in which the subject and the predicate respectively are to be subdivided, and the particular nomenclature to be adopted, may be regarded as a matter of secondary importance.





## ARITHMETIC.

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### Its Importance.

**A**RITHMETIC, like all other subjects of the school curriculum, has two distinct purposes to serve—(1) **use in after-life**, and (2) **mental training**. Its use is evident. Every person has more or less frequently to perform numerical calculations, if it should only be counting his change when making a purchase. But it may be noted that a very small proportion of our pupils will ever be called on to use more than a very few of the numerous and elaborate “rules,” in learning which they spend so much time, and which require so little time to forget.

As to mental training, arithmetic has been rightly called the mathematics of the common school. The mental discipline is **unique in kind**. No other subject develops quite the same faculties and habits of mind. Thus it happens that individual **pupils differ in their attainments in arithmetic** more than in any other subject of study. And it is to be remembered that there is no subject in which the mental training to be aimed at is so entirely missed if the teaching is not intelligent and systematic.

### Time devoted to Arithmetic.

No other subject usually receives so much time in the common school time-table. **This can scarcely be justified by the importance of the subject either for practical utility or even for mental training**; but it is undoubtedly necessary if all pupils, varying so much as they do in the arithmetical or mathematical faculty, are to meet the requirements of prescribed examinations. Few of the rules required, and still fewer of the com-

plicated problems under these rules, have any practical value beyond these examination requirements; and even as to their disciplinary value opinions may well differ. Practical value they may have, of course, for clerks, book-keepers, accountants, and the like; but it is to be hoped that only a few of our pupils are aiming at such employments.

### Early Conceptions of Number.

The child's earliest conceptions of number arise from the counting of real things. All early training, therefore, should be by means of the concrete. This process, however, carries us only a very short way, and is merely introductory to the abstract science of numbers. The facts learned by actual counting, therefore, should be very soon put into the abstract form of figures, and the processes first learned and practised with concrete things should next be practised with abstract figures, the abstract result being again verified by reference to the concrete. For example, the fact that two and two make four should be discovered by the pupil through some concrete form of counting, such as may be done on the ball-frame. But when once this fact has been learned, it should be remembered for future use, so that when the figures 2 and 2 are set down to be added, the pupil is able to set down 4 as the result, without going anew through the process of counting up the things. This is where the essential difference comes in between counting up and adding: the one is an actual operation with objects, appealing to the senses of sight and touch; the other is an abstract mental operation, depending on the exercise of memory and reasoning.

This points to one obvious deduction as regards the things to be used in the concrete counting stage. They should *not* be things which the pupil has constantly at hand for reference, such as his own fingers. They should be things which can be removed at the teacher's discretion. Otherwise the pupil will be tempted to avoid making the transition to the abstract reasoning which is the essence of arithmetical calculation. The difference is like that between wading and swimming, and there will be a strong temptation to avoid making the necessary plunge so long as the firm bottom can be reached at will.



## Gradation of Steps.

It is of prime importance that the steps we make in the teaching of number should be **graded with extreme care**, and no attempt made to advance more rapidly than the pupil can easily and surely follow us. Returning to the simile used in the preceding section, we must not expect the young swimmer to learn the art in rough water, or to continue the exercise beyond the time which suits his undeveloped powers. If we do, he will assuredly try to return to wading as the easier mode of progression. Much of the **counting by units** which is often seen instead of addition is due to the teacher's anxiety to make **rapid rather than sure progress**, and so requiring his pupils to perform exercises to which their powers of abstract reasoning are not equal.

## Initiatory Lessons.

The first lessons are necessarily designed to teach the pupil the **meanings of the terms** *one, two, three*, etc. A very young child cannot tell whether *eight* or *nine* is the larger number, because he does not know the meaning of either term. This teaching of the meaning of our names for numbers is what we mean by counting. The first step will consist in teaching the pupil to **count up to ten**, so that if presented with any number of objects not more than ten he can tell how many there are by counting them. The time required even for this elementary exercise differs very much among children who are otherwise nearly equal in mental power. In this practice the pupil acquires **the idea of greater and less** among these number-names, so that he can tell that nine is greater than six, being higher up the scale, though he does not as yet know by how much it is greater.

The next series of exercises is designed to enable the pupil to answer the question just suggested—how much nine is greater than six. These exercises should be a **series of lessons on each number in turn**, analyzing it into the various groups of which it may be regarded as consisting. Beginning with two, he learns that it consists of one and one, or two ones; that one

and one make two; and that one taken from two leaves one. Three he learns to be a group of three ones, or of one and two, or of two and one; and also that one taken from three leaves two, and two taken from three leaves one. In this way he learns the composition of all the numbers up to ten, but not all in one lesson. **The teaching must proceed no faster than the pupil can follow with complete understanding, and no faster than he can remember the results when the objects are removed.**

The results of these number lessons must not only be understood but *remembered*. There is no use in trying to spare the memory in the teaching of arithmetic. The objection to the old addition tables and such expedients is not that they appeal to the memory, but that they appeal to the memory *alone*. The difference between cramming and educating lies here. To remember without fully understanding is to cram. To understand first, and therefore remember, is education. To understand and then forget is not indeed cram, but it is certainly not education.

### Notation.

The next step is to teach notation—not the notation of hundreds, or even tens, but of the **numbers with which the pupil is now familiar**. He must learn to recognize and to make for himself the signs which we use for numbers, the **figures or digits**. Then the same exercises are to be gone through with figures that have already been performed with the ball-frame and also mentally. Some teachers prefer to combine this with the preceding exercises; but in arithmetic, if anywhere, it is desirable to attempt only **one thing at a time**.

Following this exercise, the pupil may be required to extend his power of counting up to 20, 50, or as far as desired. After twenty the counting is easy, as it proceeds on simple principles of analogy.

The pupil's acquaintance with notation must be similarly extended. The only difficulty here is the **principle of local value**—that a 2 in the second place means twenty. It is well to use some simple apparatus for this purpose, such as small sticks tied up in bundles of ten. Then the pupil sees that digits put in the second row mean bundles of ten, while those in the first



row mean single sticks. The explanation must not be too elaborate, only enough to illustrate and justify the principle. The actual use of the principle must be made familiar by requiring the pupil to write down frequently the numbers, say from 10 to 20, or 20 to 30, so that by frequent practice he learns to remember the meaning of a combination like 23 as easily as he remembers the sound of a given printed word.

### Addition.

The teaching of addition—that is, the adding of abstract numbers, as distinct from the counting of groups of things—must in the first place be in the form of mental practice. The results of counting on the ball-frame have to be remembered, and in order to be remembered they must be classified.

The basis of this classification is the fact that certain results are easier to remember than others. Thus children very easily remember the doubles of numbers, 1 and 1, 2 and 2, 3 and 3, etc. Again, they find it fairly easy to remember the constituents of 10; and as this is one of the most important means of securing correct addition and subtraction, a good deal of time may be spent on it. The pupils should be able to give with great ease the complement of ten when any number is mentioned, as “2 and what make ten?” From these two principal series of results the children can easily reason out, without counting, the sum of any two digits—that is, they can add up to 18 or 20; but at first they should not be asked to deal with digits greater than 5 or 6. In order to get addition done by reasoning rather than by counting, one other kind of practice may be very serviceable—that of giving rapidly the number which is “one more,” “one less,” “two more,” or “two less,” than any given number.

With these equipments the pupil can solve the problem of “4 + 5” by thinking of “4 and 4,” and then making his answer “one more;” or of “5 + 5,” and making his answer “one less;” or again, as 4 + 6 are 10—a fact which he should never be able to forget—4 + 5 must be “one less,” or 9. It is immaterial which of the three roads the teacher advises his class to follow, but the fourth road, that of counting up by units after 4, “5, 6, 7, 8, 9,” must be avoided at any cost. This false

method is so easy at first that nothing will prevent children following it except teaching them one quite as easy and much shorter.

Similar problems have next to be put down on the blackboard, and wrought by the children, in order that the work on the board, and afterwards on the slate, may be seen to be exactly what they have already been doing mentally.

It is important in the early stages of arithmetic to **keep the mental work well in advance of the slate work**. To an older pupil the slate is an aid to calculation; but to a beginner the making of the figures itself is a difficulty, and the operation of **slate working makes the calculation less easy**. Hence the need for giving on slates somewhat easier problems than the pupils can solve mentally.

When the little addition sum reaches three or more figures in height, and the answer becomes more than 10, the writing down of that answer must be carefully explained, so as to form a foundation for instruction in "carrying."

The next difficulty in addition is that of "carrying," which arises when more than the units place is occupied by the lines to be added. **Columns** should be made for the units, tens, and hundreds, and each name kept to its own column. The principle may be sufficiently illustrated by comparing each denomination to **things of different kinds**, such as apples, oranges, etc. Then, as it is impossible to add 3 apples and 2 oranges together in one sum of either name, the class will see the necessity for keeping units and tens in different columns, and adding them separately.

In the teaching of carrying, arrange a sum so that the units line gives an answer of more than 10—say 14, as in the example given. Now we

	5	7
	3	5
	4	2
1	1	4
	2	
1	3	4

may speak of 14 units, but cannot write them down; we cannot write more than 9 without using the tens column, so the 1 ten goes in the next column. Adding the tens we get 12, but we can only write the 2 in its own column—the 1 is hundreds. So from the units we get 1 ten and 4 units as answer; from the tens 1 hundred and 2 tens. Putting these together, we get 1 hundred 3 tens and 4 units.

The next step is to show that the 1 ten can be added in along with the figures in the tens column, and thus we get the answer at once.



Most teachers find it useful to require the carried figure to be written down. If written down as a very small figure, just beneath the right-hand corner of the 4, but above the line, it will be at once in the proper place for adding, and will not be rubbed out, so that it will remain while the pupil goes over his sum again to verify his answer. Some write the carried figure at the top of the line, which is less natural.

It is assumed that the same illustration of carrying, if needed, will be extended to the hundreds and other columns, and that the notation or writing down, and the reading off or **numeration**, of numbers will always keep pace with the extension of the addition sums to three or more columns. By-and-by the vertical lines can be dispensed with.

So far as addition is concerned, the rest is all practice. **Rapidity and accuracy together, and neither at the expense of the other**, must be the teacher's aim. And in order to get both or either, constant care must be given to method, in order to make sure that the pupils are really adding, and not counting up by units.

For fluency in adding larger numbers, several kinds of drill may be given. Counting up by tens is one kind. Such a series as 10, 20, 30, 40, etc., or 11, 21, 31, 41, etc., or 4, 14, 24, 34, 44, etc., should be run up by the pupils as required. Nines and elevens may be used in the same way, in the first case the units figure always decreasing by 1, as 4, 13, 22, ~~31~~, 40, 49, etc., and in the other increasing by 1, as 4, 15, 26, 37, 48, etc. Another kind of series may be used to impress the fact that in adding, say, 17 and 8, only the units 7 and 8 need be added; thus 8 or any digit should be added to 7, 17, 27, 37, 47, etc., as rapidly as the teacher can mention the series.

Longer and more rapid additions are much assisted by giving abundant practice on the blackboard or on printed wall-sheets, and requiring the pupils to give results only for each addition, without mentioning the figures to be added on. Thus, if the column to be added is, say, 4, 7, 8, 3, 9, 6, 5, the pupil will only say, "4, 11, 19, 22, 31, 37, 42," not "4 and 7 are 11," and so on.

Addition is really the most useful rule of arithmetic, and probably the one **most used in actual life**, and also the rule in which **blunders are most frequent**. It is worth while to spend some care in making its acquisition as nearly perfect as may be. And for both rapidity and accuracy, oral and mental drill is the best training. For this kind of drill the teacher should use methods which do not entail any speaking by him, but only by

the pupil. The long-drawn problem, beginning, "I had 10 marbles in my pocket; I bought 5 more," etc., etc., is of little or no practical use. A skilful teacher would have got round his class with an answer from each pupil before that kind of problem is even stated to the children. What is wanted is as much work as possible from the children in the time, and as little interruption as possible by the teacher's voice. Some teachers use large sheets of figures, which only require the teacher to guide the pupil's eye with the pointer as to where he is to begin adding. A series of figures arranged in a circle on the blackboard or on a printed sheet affords scope for either long or short additions, at the teacher's discretion.

A word must be said as to **the use of 10** which some teachers make in addition and other rules. In adding 6 and 7 they break it up into 6 and 4 =  $10 + 3 = 13$ , instead of  $6 + 6 = 12 + 1 = 13$ . So 29 and 4 would be  $29 + 1 = 30 + 3 = 33$ . The next ten is always made the halting-place, and the success of the method depends on the facility with which the pupil can make up the 10 from the number to be added, and add the remainder. Many teachers use this plan with the best results; and those who may not like it will probably find that any rational method will produce results as good if only taught as intelligently and adhered to as systematically and thoroughly. It is *method* rather than a *method* which tells.

### Subtraction.

In oral work, subtraction and addition should both be taught at the same time, but it is generally found convenient to leave over the slate practice of subtraction until some fluency has been reached in addition. The elementary oral practice which was recommended as a preparation for addition should always be used so as to prepare for subtraction also. The number lessons on the ball-frame should keep both in view. If the lesson be on the number "seven," for example, when the seven is divided into two groups, say 5 and 2, and the pupil is shown that 5 and 2 are 7, he should also be shown that when the 5 is taken from 7, the 2 remains, and when the 2 is taken, the 5



remains. So with every elementary number lesson—whenever addition is practised, subtraction must be kept in view at the same time. But in the early slate lessons it is better to take addition alone for some time in order to avoid confusion. The general principle in all elementary teaching is to “divide and conquer”—to make progress easy by taking the difficulties one at a time.

The first formal exercise in subtraction should deal only with single digits—subtraction of **units from units**. The second series will consist in the subtraction of **tens from tens**, and to this will soon be added units also, such as 23 from 46, but **without the use of carrying**. Up to this stage no number greater than 9 has to be dealt with, and the work is easy and pleasant until the difficulty of “carrying” arises.

“Carrying” is the only real difficulty to be faced. An example should be chosen in which only one case of carrying occurs, and the general principles explained from this. The pupil is first required to subtract 21 from 73, for example, and this he does easily. He is next required to subtract 25 from 73. Here it is plain that the old method will not serve; 5 units cannot be taken from 3. The pupil is reminded next that the 7 tens consist of 70 units, and these may be used. But only one of the tens is needed; accordingly we take a ten from the 7 tens and break it up into 10 units: now we have 13 units; and taking away the 5, we get 8 as answer in the units place. We deal with the tens next. We already took away 1 ten from the 7, and now there are 2 tens to be taken away—in all, 3 tens; 3 tens from 7 tens leave as answer 4 tens.

7	3
2	5
4	8

A common method recommended in text-books on this subject is to write the decomposed ten in the units column as 13, and at the same time to score out the 7 and re-write it 6; then in subtracting the tens the pupil takes 2 from 6 instead of 3 from 7. It may be useful at first to write the decomposed ten in this way along with the 3, but to re-write the 7 as 6 is cumbrous and confusing. The pupil is required to perform the subtraction of 1 ten from 7 tens before he gets his units column finished, and then to come back and subtract in the tens column again. Since that 1 ten and the 2 tens in the lower line *must both come from the 7 tens*, the natural way is to take them both away at once.

6	13
2	5
4	8

The extent to which this method may become unwieldy is best seen by taking an example such as  $10,000 - 9$ . But of course the pupil would in all probability have been taught to discontinue the re-writing

before so difficult a problem would be given. Apart from this disadvantage, however, the method is sound and easily comprehended. As a matter of fact, it will generally be found that any teacher's preference in this matter, whether he shall teach his class to say "2 from 6" or "3 from 7" in the tens place, depends chiefly on the method he has been taught as a child. There is, however, one point about the latter form that counts for something. After saying "13" in the units line, it comes natural to a child, on the analogy of addition, to add 1 to the 2 in the tens line, though for a different reason. Thus there is little danger of the mistake being made of taking 2 from 7 in the tens line—a mistake which re-writing the 7 as 6 is partly designed to avoid.

If the process be gone through with concrete things, 7 bundles of 10 sticks and 3 single sticks, the teacher can show the use of the decomposition very clearly. Five single sticks are to be taken away to another part of the table; only 3 are available. Accordingly a bundle of 10 must be untied, and 13 are now ready for use. Five of these are put aside, leaving, as the pupil may see by counting them, 8 in the original place. Next, two bundles of 10 are wanted to place beside the 5 sticks. These are also taken away from the seven bundles and put aside. Then 4 bundles are found to remain. But it can serve no good end to stop after taking away the one bundle and count the remaining six. Accordingly it is clear that the re-writing of the 7 as 6 is not only cumbrous in practice but useless in the concrete example.

The method here described, which we have seen to be **decomposition with a deferred subtraction of the decomposed ten**, is generally explained in text-books as resting on an entirely different theory, that of **equal additions**. This theory is based on the fact that when equal quantities are added to unequal, the difference between the unequal quantities remains unaltered. Thus the difference between 3 and 8 is the same as the difference between 13 and 18, or 23 and 28. Since, then, in our example, we added 10 units to the 3, and afterwards 1 ten to the 2 tens in the lower line, it is explained that we have added 10 to each line of our subtraction; then it is further explained that as this is a difficult principle for children to understand, consequently the method of decomposition is preferable.

There is no doubt at all that decomposition is the preferable method, and it may be added that the ordinary theory of equal additions is not only an undesirable one but an impossible one. But the method first explained is really, as we have seen, that of decomposition, differing only from the later decomposition



method in being one step shorter; the deduction of the decomposed ten is deferred until the units column has been finally settled, and then completed along with the deduction of the 2 in the lower line. There is no "equal addition" required for an explanation.

One or two points may be further explained for the sake of clearness:—

1. Equal additions alone will not serve our purpose. If we add ten to each line, as exponents of this theory assume, we have now to take 35 from 83, which is quite as difficult as to take 25 from 73—that is to say, it is impossible, unless we not only *add* the ten, but at the same time *regard it as 10 units* (in the upper) *instead of 1 ten* (as in the lower line). We have therefore to decompose as well as to add the ten. So the theory is really no explanation at all unless accompanied by decomposition. There is no choice possible between the two theories.

2. There is a method of using equal additions, but not by adding ten—in fact, ten is the only number which never can be used for this purpose. In our original example,  $73 - 25$ , the best number to add to each line is clearly 5. The example then stands as  $78 - 30$ , and the answer can be written down by the pupil who has not mastered "carrying." If the teacher chooses to use equal additions as his method, which is not at all like the best rule is to add such a number to both lines as will leave a cipher in the lower line, but never to add 10, which leaves the difficulty entirely untouched.

3. The theory of equal additions depends on a different view of the problem involved in subtraction, and a less easy view for children than that of decomposition, when applied to concrete things. *It views subtraction as a process of measuring the difference between two quantities, not as the taking of a certain number of concrete things from a larger heap of them, and discovering how many are left.* Now the process of telling the difference is much more abstract than the other, and much more remote from the notions which are made use of in early addition and other numbering exercises. If the teacher use such an illustration as the 7 bundles of ten and the 3 loose sticks, he will find it impossible to use any method but decomposition to represent on the slate or blackboard the actual steps he takes in dealing with the concrete things. The only intelligible way to show how subtraction of the figures on the board corresponds to the actual "taking from" which it represents, is to use the decomposition method.

Many teachers use a modification of the decomposition method which is worth notice. In the example already used, when the ten is taken from the 7 tens it is not added to the 3 units to make 13; the 5 units are taken from that ten, and the remainder then left added to the 3 gives the answer 8. This method has one obvious advantage—the pupil never has

to subtract from a number greater than 10. Again, when compound subtraction is taught, the method which is certainly the best is quite analogous to this use of ten in simple subtraction. It is a method which can be easily illustrated by the concrete example referred to, and it has undoubtedly produced very good results under teachers who believe in it and use it intelligently—two things which are indispensable to the success of any method.

### Multiplication.

We have already seen that it is unwise to regard addition and subtraction as two separate "rules," the one of which is first to be taught and afterwards the other. They are two closely related ways in which numbers may be dealt with, and both require the exercise of the same faculty. The same may be said of the other simple rules as well. The power of dealing with numbers implies some fluency in the four simple rules, and conversely the use of the four simple rules is the best way of gaining the power of dealing with numbers. Regarded in this aspect, there seems no reason why a pupil should remain ignorant of division for three or four years after he has begun addition. There is therefore much to be said in favour of teaching the four simple rules concurrently from the beginning, a plan which has undoubtedly produced very intelligent results. But when this is done, only small numbers must be dealt with, such as are usually given in mental exercises, and no number above 100 should be attempted for the first two years or so of number teaching. The result of such a course is a kind of knowledge of number which gives much more ease in dealing with problems than the usual plan of following each rule out to its extremity before beginning the next. Whether this plan is adapted for slate work or not, it should certainly be used in the mental arithmetic of young classes.

In accordance with traditional usage, we have next to deal with multiplication. Multiplication is closely related to addition. It is a special case of addition performed in a contracted form. When all the numbers to be added are the same—all fours, or tens, or the like—we perform the addition of them by



means of multiplication. The sum of three fours and the product of three times four are identical. In the one case we add up four and four and four; in the other we suppose that the addition has already been performed, and we require the pupils to commit the result to memory for future use.

The **multiplication table**, then, is a **series of results of addition**, arranged so as to be committed to memory. And if we regard it so, we see at once that there are some results which may be so remembered long before we begin the formal study of multiplication—easy results such as are found in the first two or three lines of the table. In any case, we should require the pupils to **construct their own multiplication table** before they begin learning it off. This will at once serve to connect it with a process already known, and to ensure that its structure is understood.

But when the table has been thus understood, **the memorizing must be perfect**. Whatever table we set our pupils to learn ~~must~~ be learned *thoroughly*. There must be no hesitation or thinking out when it comes to be used; the memory must be quite spontaneous, automatic, and even mechanical. This is so commonly recognized as necessary that we often use it as a kind of proverb; we speak of anything which is thoroughly remembered as being at our fingers' ends "like the multiplication table."

In learning the table, it is important that it should be learned not merely in the direct form, but in **as many different ways as possible**. In learning the 3 line, it is not enough for the pupil to know that, say, 3 times 6 are 18; that product should be known as 3 times 6, 6 times 3, three sixes, or six threes. In view of future applications, he should also be able to tell how many threes are in 18, and how many sixes; and from that he should be able to tell how many threes are in 19 and 20 as well—that is, the multiplication table should be practised as a **division table** also.

As soon as two or three lines of the table have been mastered in this way, not merely learned for repetition, easy multiplication exercises should be given on the blackboard, and then on

the slate, the multiplier being only one figure at first. The process of "carrying" will be readily understood as being the same as in addition.

There is no reason why the usual order should be followed in teaching the various "lines" of the table. The 10 line, for example, will probably be found easier than the 6 or 7 line, and there is some advantage in teaching it at an early stage. By a few examples it can then be shown that multiplying by 10 is merely multiplying by 1 and adding a 0. This fact can be utilized in explaining the great difficulty of simple multiplication—that of "placing" the various lines of the product.

The teacher may take an example, and multiply by 10; the result is found to be equal to multiplying by 1 and adding a 0, or beginning to write the product of 1 in the second (tens) place. Multiply this answer by 10 again: this is equal to multiplying the original number by 10 times 10, or by 100; and the answer is seen to be the same as multiplying by 1 and adding two 0's, or beginning the product in the third (hundreds) place. So the general rule is seen—to begin the product of any figure in the same place which that figure itself occupies in the multiplier, whether units, tens, hundreds, or any other. The teacher will next proceed to show the same principle with multiplier 2, and then 20, the latter being 10 times 2, or the first answer with 0 added. So with 200. The third step is to use a multiplier with more than one significant figure, such as 21. The two answers, the product of the 1 and of the 20, should first be obtained separately, and then it should be shown that the complete product is obtained by adding these two partial products together. Then the working should be done in the usual form, but the 0 in the units place should be inserted before multiplying by 2 to avoid confusion or error. While the pupil is at the stage where it is desirable to insert the 0, he should be required to decompose his multiplier on the margin of his slate before beginning, writing, for example, 321 as  $300 + 20 + 1$ , so as to make sure that he understands why the product of the 3 is written with two ciphers and that of the 2 with one. But it is desirable to cease using all such helps as soon as they can be dispensed with.

The multiplication may be done by beginning with the 300 and ending with the 1 as well as in the usual order; and this has one great advantage when a result is wanted only approximately correct, for the multiplication by 300 gives a result *near* the answer in one process.

The multiplication table as usually taught ends with  $12 \times 12$ . But there are many reasons which make it desirable to carry it further—say, to  $20 \times 20$ , as in the old "extended" multipli-



cation table. The table as at present used might as well stop with  $9 \times 9$ , but for the fact that in money calculations 12 is a factor in very common use. Children are rarely called on to use any multiplier above 9 in slate work, and it is frequently found that in multiplying by 12 they do it in two separate lines. The learning of the "extended" table is found to be most valuable for cultivating the power of **dealing with large numbers mentally**. Most teachers who have been specially successful in teaching mental arithmetic have used this form of the multiplication table; and in ordinary slate work, wherever operations are to be performed by multiplication or division, its use conduces to rapidity and ease of working.

This extended table may be learned about Standard III. stage, before the weights and measures have to be attended to.

### Division.

As multiplication is a special case of addition, so division may be regarded as a **special case of subtraction**. The problem we solve in subtraction is to find what is left when one quantity is taken from another, or how much one quantity is greater than another. In division, the problem is to find how many times one quantity is contained in another; and this may be performed by a **series of subtractions, or by the shorter process of division**. Division may also be regarded as the reverse of multiplication, as the analysis of a product into two factors, one of which is given, instead of finding the product of two given factors; and accordingly we fall back on the **multiplication table** as the basis of our operations in division. For this reason it is important that the table should be learned and orally practised with a view to division as well as to multiplication. As we have already explained, when the child learns that the product of  $3 \times 6$  is 18, he should also be taught to observe that 3 is contained in 18 six times, and 6 is contained in 18 three times. By this means he has become **familiar with the idea** of division, and has had considerable mental practice in the process, and what he has now to do is to apply this process in solving more complicated problems.

For the early examples, the short division form is the best. As a help to the "placing" of the figures in the quotient, vertical lines should be drawn at first, as in teaching addition. The sums to be divided also should at first consist entirely of figures which leave no remainder. A few examples of this elementary kind wrought on the blackboard and then on slates will familiarize the pupil with the form in which the problems are to be wrought.

Some explanation should be given why we begin at the left in division, while we begin at the right in addition, subtraction, and multiplication. This may be done when the teacher begins to explain "carrying" in division: as in addition we begin at the right in order to be able to carry up to a higher denomination, so in division we begin at the left in order to be able to carry down to a lower denomination.

When the problem of carrying comes to be faced, an easy example should be taken, like  $74 \div 2$ . Beginning with the tens place, 2 goes in 7 three times, and 1 over. We put down the 3; but we have not yet divided the 7 tens, only 6 of them. The remaining one cannot be divided as a ten, but it may be divided as ten units. We carry this ten down to the units column; so instead of having 4 units to divide we have 14, which gives 7 as answer. The resemblance between this decomposition and that used in subtraction should be pointed out.

At this early stage of work the remainder from the units place should be simply written down as "remainder." In dividing 35 by 3, for example, the pupil reads his answer as "11 and 2 over." It is somewhat more difficult to understand the reason for writing the remainder as a fraction. When this has to be done, it may be explained that the line represents the sign of division, and  $11\frac{2}{3}$  as answer means that 35 contains 3 eleven times, and leaves 2 still to be divided by 3—a process we cannot complete in the meantime. The idea that 35 contains 3 eleven and two-third times is probably too difficult to be explained when the pupil has no knowledge of fractions.

The next step is to make the transition to long division. An example should be taken which can be wrought by short division, such as  $7,398 \div 2$ . It should first be wrought out on the



blackboard in the ordinary short-division form. Next the teacher should arrange it as for long division, returning to the old help of drawing **vertical lines**, so as to make columns for hundreds, tens, etc. He should explain that in this form all the **multiplications** formerly done mentally are to have their **products written down**, and all the **subtractions** are to be **actually shown**, so that the remainders will appear as the answers to a series of subtractions. He should call attention to the fact that each figure is "taken down" so as to occupy the same column, hundreds or tens, etc., that it held in the dividend at first, and that the figures in the answer fall into the corresponding column there. At every step he should show the identity of the processes in both forms of division—in the one the intermediate steps being noted on the slate or board, and in the other performed mentally. The next step should be to work an example of division where the divisor is too large for doing these steps mentally—say, 31—and the use of the longer form will at once become evident.

Some teachers adopt the following plan to secure that figures in the answer will be properly placed, and no ciphers omitted. Instead of writing the answer to the right of the dividend, as is usually done, they require it to be **written above the dividend**. Then as each figure is "taken down" for division, the new figure of the answer obtained by dividing it is written *above* it. This calls the pupil's attention to the necessity for having a figure in the answer for each figure taken down in the dividend; and as a help at an early stage of long division it is of undoubted service. The plan has certain advantages, and may be used for a time with profit.

Another plan, with less to recommend it from an educational point of view, has been used to facilitate division by large divisors. Suppose the divisor is 378, the pupils are directed first to write down on the margin of their slate what is really the 378 line of the multiplication table; that is to say, they multiply 378 successively by 2, 3, etc., up to 9, and write down the products 756, 1,134, etc., up to 3,402, in a column on the edge of their slate. When they wish to find how often 378 is

contained in any number which they may be dividing, they have only to turn to this column and find which number in it comes next below the number to be divided. This saves all delay with trial figures in the answer and consequent possibilities of error. The objection to the method is that it is entirely mechanical, and thus prevents any growth of power in fixing on the proper trial figure. But it has no doubt arisen as a means of defence, so to speak, against the equally mechanical and absurdly long tests often set in long division.

It has already been pointed out that there is no good reason for leaving over the study of one "rule" till the preceding one has been practised to its full extent in large numbers; here it may be mentioned that there is as little reason for dropping the practice of a rule already learned because a new one has been commenced. Addition, in particular, should still be carried on. At this more advanced stage it may well take the form of practice in **adding two columns at once**, units and tens. This is a most useful exercise, and one which, though very far removed from the usual simple addition of the common school, is yet easily learned. It has also a high value in giving the kind of mental training most to be aimed at in arithmetical teaching—the power of dealing mentally with large numbers.

### Problems.

Thus far we have spoken of rules or methods of dealing with numbers, **without taking into account what these numbers represent**. The only reference to concrete things was in the introductory stages, in learning to count, in dealing with the grouping and analysis of simple numbers, and in illustrating the simple processes of addition and subtraction. The branch of arithmetic which is concerned with the relations of abstract numbers in this way is sometimes called **Pure Arithmetic**, while **Applied Arithmetic** deals with the application of these rules and relations to concrete things.

In some arithmetical text-books the plan is followed of proceeding with pure arithmetic, passing from the four simple rules to vulgar and decimal fractions. But for common school



purposes this would be a mistake. And it would be no less a mistake to confine the teaching to pure arithmetic during the study of the simple rules. At every stage of progress the rules of addition, subtraction, multiplication, and division should be used in the **solution of problems dealing with actual things**. It is of course necessary to teach, and for some time to practise, the rule on slates in the abstract way; but as soon as the mechanical difficulty of manipulating the figures has been somewhat mastered, the elementary "problem" of a suitable type must be introduced. Even before this can be done on slates it can and should be done mentally. For although a great deal of mental arithmetic in the early stages must be mere drill in numbers—and the more rapid and automatic the processes become the better—yet some time should always be given to the solving of short mental problems.

- Short they should always be. Many teachers waste time by giving problems with too long explanations and too many processes, so that many of the class cannot remember them all. Then the question must all be repeated, confusing those who have already begun to solve it; and at the close it is often impossible to say whether the fewness of the answers is due to want of knowing the rules and how to manipulate figures mentally, or to being confused by the conditions and terms of the problem.

Want of practice in applying the rules makes the learning of the rules **practically useless**. Multiplying or subtracting comes to be regarded as an operation which may be performed with figures on a slate, but which has little connection with the world of real things. So when a simple calculation regarding real things is given, the pupil is actually at a loss sometimes whether he should multiply or divide! This difficulty is by no means uncommon, and its commonness may prevent our noticing its real significance. Its presence really stamps the whole of the arithmetical teaching received as practically valueless. We are teaching the boy expertness in handling tools of whose real use he remains ignorant; or at least we are teaching him so that the handling of the tools and the circumstances under which they should be used do not suggest each another to his mind. It often happens, too, that if a

child is asked to solve a problem where the numbers are somewhat large, he is at a loss how to begin, while the same problem given with small numbers will be solved mentally with the utmost ease. This indicates the same weakness in teaching—that it has been confined too much to pure arithmetic, and that the practical applications have been neglected.

The only cure for this is abundance of problems introducing the rules already mastered. And in setting such problems, the teacher should always construct them with some regard to the facts of real life. The conditions specified should not be obviously impossible or improbable, and the answer should be such as one would *expect* from the experience of life. This caution will need to be kept specially in mind, in dealing with prices of goods, at a more advanced stage. For example, the teacher should not set problems, even for mere practice, where the answer would require the price of an ounce of tea to be several shillings, or that of a hundredweight of sugar a few pence. And on the other hand, the pupil should be cautioned against resting satisfied with an answer that is evidently and grossly at variance with common sense.

### Reduction.

After some practice in the four simple or fundamental rules of arithmetic, it is our general habit to proceed to the application of these rules to sums of money and other concrete things. **This application we call the Compound Rules.** A necessary preliminary is the power of changing a quantity from one denomination to another, which corresponds to “carrying” in the simple rules. At this point, then, arithmetical teaching *must* take the form of applied arithmetic, but it is very unwise to postpone such teaching till this point is reached.

The great difficulty which beginners find in any given case of reduction is to know whether they should multiply or divide. Had the **practical** use of these two processes been as well attended to as the mere manipulation, such a doubt could never arise in the pupil's mind. The common rule given—to multiply when a lower denomination is wanted, and divide when a higher is wanted—is merely a short “rule of thumb” to supply this deficiency.

Our common tables of money, and measures of weight and of distance, with all their venerable irregularities and inconveni-



ences, make the teaching of reduction a matter of considerable time, if not of great difficulty. **These tables should never be merely learned by rote**, but the ideas of the various weights and measures should be made clear and useful by the actual seeing and handling of the various units—ounce, pound, foot, yard, etc. Familiarity with these will do much to prevent absurd answers from being given in reduction and the compound rules.

It may be worth noting that certain tables, such as our Time table, do not give a scale of numbers which can be used in the ordinary way in reduction. A certain number of years, for example, cannot be reduced to days by bringing them successively to months, weeks, and days. The reduction can only be performed by multiplying by 365, and then only approximately, owing to the fact that certain of these years have 366 days. But to multiply by 12, 4, and 7 is obviously useless. In measures of length, again, we have really several parallel and distinct tables to teach—miles, furlongs, poles, yards; miles, furlongs, yards; miles, furlongs, chains, yards; or miles and yards simply. Such different forms of table should be studied and practised both separately and in relation to each other.

Many errors will be avoided by attending to one simple precaution, and that is, requiring the pupils to write after each step in their reduction *the name of the unit* to which they have reduced the original quantity. In reducing tons to ounces, for example, the successive products obtained should have "cwts.," "lbs.," "oz.," or the like, written after them. This will both suggest the next multiplier, and remind the pupil of the proper place at which to add in any cwts., lbs., or oz. which may be given along with the tons to be reduced. A similar plan should be adopted in ascending reduction.

### Compound Addition.

This rule differs so little from simple addition that no great difficulty lies in the way of teaching it. The reducing of each sum to the next higher denomination and carrying up the result should be shown to be **similar to our carrying up the tens** in simple addition. In early examples, only two columns should be used—pounds and shillings, or shillings and pence, or pence and farthings. By the time compound addition is reached as a slate rule, the pupils should have enough fluency in mental work to enable them to perform *mentally* the reduction of the sum of the farthings, pence, or shillings column to the next higher denomination.

## Compound Subtraction.

As in simple subtraction, the chief difficulty here is with "carrying." The same rule should be followed here as was recommended in the section dealing with simple subtraction. When subtraction is impossible as the sum stands, a unit of the next higher denomination must be decomposed into the required name. The actual deduction of that unit should be deferred until the subtraction process reaches the denomination concerned.

In the example given in the margin, 3 farthings cannot be taken from 1: take one of the 6 pence and call it 4 farthings; then take the 3 from the 5 farthings (or, better, from the 4, adding the 1: this method corresponds to the special use of 10 in simple subtraction already referred to on page 93). Next, there is that 1 penny to be counted off the 6; but there are also 8 pence standing to be subtracted, so the 1 and the 8 should be taken away at one process. But 9 pence cannot be taken away from 6: take one of the 13 shillings and call it 12 pence; 9 pence from 18 pence (or, again, from 12, and adding the 6) gives 9 pence as answer. Now there is that shilling to be counted off the 13; but there are also 17 shillings to take away, so we take them both at once. But 18 shillings cannot be taken from 13, so we take one of the 5 pounds and call it 20 shillings. Then 18 shillings from 33 shillings (or, better, from 20, adding the 13 to the remainder) gives 15 shillings. Lastly, there is the 1 pound to count off the 5, and also the 3 pounds standing to be subtracted; these 3 pounds taken from 5 leaves 2 pounds.

In this example the superiority of the second alternative (given in brackets) in each subtraction is clear. In the shillings, for example, it is very much easier to take 18 shillings from 20 and add the 13 than it is to take 18 from 33. And this is analogous to what is always done in actual life. If a customer has £1, 13s., and wishes to pay an account of 18 shillings, he would never dream of going through the process of changing the whole pound first into shillings, placing them along with his 13 shillings on the counter, counting out 18 of them for the merchant, and returning 15 to his purse. The 18 shillings are deducted from the pound, and the balance of 2 shillings only added to the 13 which remain in his purse.

In the practice of mental arithmetic, this method of subtraction should be used systematically. A useful beginning is the exercise of "making up to 1s." any given number of pence and farthings. The next step is to make up similar quantities to 1s. 3d. or 1s. 1½d. or the like, by first making up to 1s. and then adding the 3d. or 1½d. Children taught in this way, when asked the difference between 18s. and £1, 13s., will at once make up the 18s. to £1 (which requires 2s.) and add this to the remaining 13s.

Practical life may also supply a parallel to the method of deferring



the subtraction of the decomposed unit recommended here and in simple subtraction. In the case of the pounds in the example given above, we do not first write the £5 as £4 when we change the "borrowed" one into shillings, and then subtract £2 from £4. We take away the £1 and the £2 from the £5 in one operation. So if a customer who owes his grocer £1 from a former transaction, buys goods worth £2, and tenders a £5 note in payment, the grocer does not first return £4 to clear the debt, and then receive £2 as the price of the goods bought; he deducts the £1 of debt and the £2 of price at one operation, and hands over the remaining £2 of change. As a matter of fact, the £5 was not £5 of the customer's own when he entered the shop. The previous debt had reduced it to £4. But the actual reduction to £4 is not made until the new account is also settled. This parallel may be useful to justify the method recommended here and in simple subtraction. In any case, the £1 which is added to the £2 in the lower line must be clearly seen to be the adding of one *minus* quantity to another—that is, the actual taking away of the £1 which was changed into shillings, along with the £2 required by the problem to be taken away. It must not be supposed to be due to the principle of "equal additions."

### Compound Multiplication.

Compound multiplication presents few difficulties as to method, but the extreme length of many of the examples set in books and in examination papers gives great scope for blunders in working.

In the early examples, the multipliers used should always be single figures, and the reduction should be shown to be identical with the process in compound addition. As larger multipliers come to be used, the necessity arises for a form such as is here given, which is often called "long multiplication," after the analogy of long division. This form has the advantage of showing the various steps in the working out, and thus presents to the teacher an opportunity of seeing where any error has occurred. It also gives the pupil greater facilities for checking the accuracy of his work. The teacher should be careful to insist on having the complete answer put down either at the end of the detailed working, or in the place it would naturally occupy in a short multiplication exercise, or both. He should not have to gather the

	£	s.	d.	
	7	12	9 $\frac{1}{4}$	
			45	
Ans.	343	16	6 $\frac{3}{4}$	
		4)	135 far. (3d. × 45)	
			33 3d.	
			405.....(9d. × 45)	
		12)	438d.	
			36s. 6d.	
			540.....(12s. × 45)	
		2,0)	57,6s.	
			£28 16s.	
			315.....(£7 × 45)	
Ans.	£343	16s.	6 $\frac{3}{4}$ d.	

answers of the pounds, shillings, and pence from their various positions as obtained in the course of the working.

### Compound Division.

There is no special point of difficulty about this rule. The analogy of simple division should be used, and the addition of the various quantities of lower denominations at their proper places should be shown to be analogous to "taking down" the tens, units, etc., in their proper order. Early examples with one figure may be done in the form of short division. When long division is taken up, the teacher should insist on the complete answer being distinctly written in one place, as in the preceding rule.

All the compound rules should be practised in the various tables of weights and measures. The treatment of the measures of length and surface, when the factors  $5\frac{1}{2}$  and  $30\frac{1}{4}$  come in, should be avoided until some acquaintance has been made with the manipulation of fractions. In the first place, these tables should be used in a form which omits poles and square poles respectively. The exercises should be set in such a form as to permit of this—in the case of long measure by passing at once from furlongs or chains to yards, or from miles to yards; and in the case of square measure, from roods or acres to square yards. Solid measure should not be omitted, in view of future exercises in measurement.

### Calculation of Prices.

The compound rules are only special applications of the simple rules. In fact, it may be broadly stated that there are only four rules in arithmetic, which may again be regarded as not really *four* but *two*, and that everything else is an exhibition of how to use these rules for various practical purposes.

Calculation of prices forms at once their most common practical application, and that most interesting to children, because bearing so evidently on the real necessities of daily life. Here, as everywhere else in arithmetic, the instruction should be at first oral and the working mental. These mental exercises in simple form may profitably form part of the daily work from the very earliest stages of arithmetical teaching; and if they do so, there will be little difficulty found in the teaching of what is called in arithmetic text-books (but probably nowhere else) "Bills of



Parcels." If this mental teaching is systematic, and if "problems" are habitually given in the various rules taught, when the pupils reach the stage at which "bills of parcels" is usually introduced, there will remain nothing for the teacher to do beyond showing the proper form in which accounts should be made out.

There are certain short methods which should be explained and diligently practised for mental calculations of prices, such as the rule for finding the price of a dozen, a score, etc. But the pupils should also be required to *apply* these rules to find the price of numbers which come near such round numbers.

The rule for finding the price of a dozen should also be used in finding the price of 24, 36, 48, etc., and likewise in finding the price of 13, 11, 14, of 25, 23, 26, of 37, 35, 38, and so on. This is a form of exercise often neglected, and a class can frequently tell off-hand the price of a dozen at 9 $\frac{1}{2}$ d., while unable to tell the price of 14 at the same rate. In the same way the "score" should be used as a basis for finding the price of 21, 19, 22, of 40, 41, 39, 42, of 60, 61, 59, 62, and so on. Whatever number is given to be calculated, the children should be trained to seek the nearest round number whose price is easy to reckon up, and then add or subtract the price of the difference from that number.

A similar practice is useful when the given price is near a round number. Many classes could tell easily the price of 28 at 1s. who would be at a loss to find mentally the price of the same number at 11 $\frac{1}{2}$ d. or at 1s. 0 $\frac{1}{2}$ d. The price at £1 should be used as a basis for finding the price at any sum near £1, such as 19s., 19s. 6d., 21s., and so on; and the price at 6d. or at 10s. should be used to find the price at any sum near these rates.

Certain common weights should in the same way be made fixed points for calculation. The price of 1 cwt. or 1 qr. or 1 stone at 1d. per lb. can be easily remembered, and these sums should be made the basis of such calculations as "half a hundredweight at 2 $\frac{1}{2}$ d. per lb.," or the like. It is a very valuable training to practise the building up of an answer step by step from such easy fixed points or foundations, and frequent drill should be given in such problems. Mental calculation should by no means be confined to fixed rules where the result can be got in one operation. The power of building up a result step by step, by simple rules, is of far more value, both practically and as a means of mental training, than nine-tenths of the elaborate rules and methods prescribed to be committed to memory in many text-books on mental arithmetic. It is precisely this building up of an answer which is systematically used in the next rule to be considered—Practice.

### Practice.

Practice is one example of the process just referred to—that of building up a complete calculation of price from a more

simple basis, usually the price at £1. It is really no more useful a rule than many other rules which have to be used in calculation of prices, and in practical work it is no more used than these others. But it has secured the distinction of being treated as a separate "rule," with the result that it has been elaborated and extended to a degree very far beyond any possible practical utility. Most examination exercises set in this rule contain the caution, "Find *by practice* the price," etc.; and in many cases the caution is necessary, for the examples are such as no business man would ever think of solving by that rule—often, indeed, such as no business man ever has to solve at all. But being so set, they must be solved in the prescribed fashion instead of by the natural method of multiplication or otherwise. No doubt the exercise has some value as a kind of mental gymnastic, but it is a pity that some more suitable name than "practice" could not be found for the process.

The rule is of no real service so far as mental work is concerned, unless when the odd shillings and pence form **one, or at the most two, aliquot parts**; and it is by mental calculation that prices are most commonly computed in real life. In slate work the number of parts may in some cases be more than two, and yet the process be easier than multiplication, but only in some cases.

Here, as formerly, mental exercises must come first, and they should be treated as under the preceding section, Calculation of Prices. The problems should at first take up prices with £1 and an easy fraction, such as £1, 10s., £1, 5s., or £1, 15s. The pupil should first obtain the price at £1, and from that as a basis get the price at the 10s. or 5s., which he should reckon as half or one-fourth of the former. In the case of £1, 15s., the plan should be to get the price at £2 and deduct one-fourth of the price at £1. From the beginning the pupil should be made familiar with the *subtraction* as well as the addition of the subsidiary parts. After considerable fluency is reached in dealing with such problems, and with those where £2 or some easy number takes the place of £1, the next step should be to show on the blackboard the best way of working out such examples. The table of aliquot parts of £1 and of 1s. should then be thoroughly learned, if this has not already been done for the sake of mental calculation of prices.

There is one modification of this rule not usually taught, which is extremely useful not only in mental but in slate calculations—the practice of dealing not only with aliquot parts but with multiples of



them. Thus 15s. is easiest dealt with in some problems as three times  $\frac{1}{3}$  or as  $\frac{3}{4}$  of £1. The price of 88 at 7s. 6d., again, is three times the price at 2s. 6d., which is  $\frac{1}{3}$  of £1. At 2s. 6d., 88 will cost £11, so the answer £33 is very easily found. For this purpose the table of aliquot parts should be used to find the value of all easy multiples of them, such as  $\frac{2}{3}$ ,  $\frac{3}{4}$ ,  $\frac{5}{8}$ , and the like.

Some teachers use the plan of reducing the pounds in all complicated prices to shillings, then multiplying the number of articles by the shillings, and taking the pence only as aliquot parts of 1s. The answer must finally be reduced to pounds. This is practice, of course, in the technical sense of the term, though perhaps scarcely the method which the designer of the problem expected. But it is a very natural kind of self-defence against the unreasonably complex working which many practice problems involve. As to correctness of result the plan works well enough.

### Proportion.

The teaching of simple proportion or "rule of three" should be preceded by lessons on ratios, and by exercises in finding the missing term in any proportion. The meaning of the signs : and :: should be explained, and the latter sign should be shown to be equivalent to =.

The practical exercises first given should be of a simple type, such as the calculation of the price of a certain number or quantity, when the price of another number or quantity is given. The principle here is easy to grasp—namely, that the prices must be in the same ratio as the quantities. The forms of such examples should be varied, and it should thus be shown that the usual arrangement—that of making the missing term the fourth proportional, and keeping the first and second of the same name—is merely a matter of convenience. But this once explained, that arrangement should be adhered to.

For example, the problem, "If 5 articles cost £20, how much will 6 of the same cost?" may be placed  $5 : 6 :: £20 : ?$  or  $6 : 5 :: ? : £20$ , or  $5 : £20 :: 6 : ?$  and in each of these three forms again the first two terms may be interchanged with the second two. The general rule that the product of the extremes must be the same as the product of the means will always give the correct result. But the difficulty will sometimes arise as to what the result means when obtained, or what its denomination is; and this is most easily determined by children when the conventional order of terms is adhered to.

The meaning of inverse proportion, as distinct from direct,

can be made clear by a rough statement such as this—that in the case of articles and their price the relation is, “the more of the one, the more of the other;” but in some other cases, such as the weight of articles and the number of them in a ton, “the more of the one, the less of the other.” Simple exercises regarding concrete things will make the meaning clear enough.

The **unitary method** is sometimes used instead of the rule of three to solve such problems. It is so called because in calculating the price of a certain number from the price of a given number, we first find the price of *one*, and then multiply by the number whose price is required. It should be shown that this is really the same process put down in a different form. The unitary method is apt to afford more opportunity for error; but it should certainly be taught, for as there is no “rule” to remember, and as the calculation is made by a common-sense use of the simple rules, it is more likely to be used in after-life by those who have such calculations to make.

It frequently happens that, in proportion problems, one or more facts are mentioned, or numbers given, **which have no bearing on the calculation**. Pupils should be taught to examine for themselves whether such numbers really affect the result, or whether the problem reads intelligibly when they are omitted.

Again, in compound proportion especially, **ratios are often given fractionally**—for example, it may be stated that certain men work  $\frac{3}{4}$  of the time of others, or the like. It is not at first clear, perhaps, when the ratio should be 4 : 3 and when 3 : 4. But the pupils should be taught to write it  $1 : \frac{3}{4}$ , which is  $\frac{4}{4} : \frac{3}{4}$ , and this they can see to be the same as 4 : 3.

**Compound proportion** should be shown to be merely a series of **simple proportion problems**. A fourth term is obtained by the use of one set of ratios, and made third term in a new proportion whose first and second terms are a different set of ratios. But the same result can be obtained by **compounding the two or more sets of ratios**—that is, using the product of the two first terms and the product of the two second terms as a new first and second term.



To illustrate this point, take such an example as this: "If 5 men earn £60 in 12 days, how much will 7 men earn in 11 days?" First, disregarding the time, and taking the ratio of the men only, we get  $5 : 7 :: £60 : £84$ . Next, taking the ratio of time, we get  $12 : 11 :: £84 : £77$ . To do this in one operation we have to compound the two ratios  $5 : 7$  and  $12 : 11$ . This we do by multiplication,  $5 \times 12 : 7 \times 11$ , or  $60 : 77$ , and by using that ratio we get the result. But the teacher must also show the most convenient mode, the conventional form of statement, and require this to be adhered to after he has clearly explained its meaning and shown its connection with the simple rule. The usual fractional form is of course the most convenient for the use of cancelling in compound proportion.

### Vulgar Fractions.

There is no reason in the nature of the subject why vulgar fractions should not be studied immediately after the simple rules. That would probably form the best arrangement so far as the science of arithmetic is concerned. But there are very strong reasons against this order so far as the learners of the science are concerned. A child's learning of any subject depends very much on his interest in the subject. This is a very good reason why he should be introduced to applied arithmetic as early as possible—as soon as he can add mentally, indeed, without waiting until he can do slate addition. And the same reason makes it the best arrangement to take up the systematic study of the compound rules, or the application of the simple rules to our tables of value and measure, as soon as the simple rules are pretty well mastered.

Again, we must keep in view not merely the teaching of arithmetic as a means of mental training, but as a practical science to be used in the practical work of life. This consideration should be enough to determine us to adopt the order we have followed—namely, that of putting the child as early as possible in possession of a certain amount of useful knowledge of arithmetic, instead of a wider theoretical and scientific knowledge of it. The school life of many of our common school pupils ends very early. To delay the acquisition of this practical skill in favour of the acquisition of theoretical knowledge would prevent their ever reaching such a practical grasp of the subject as most people require in their daily lives.

It is clearly unwise, then, to begin the systematic study of fractional arithmetic until solid attainments have been secured in the calculations most required in life. In recent Education Codes the tendency seems to be to introduce the study of fractions at an earlier stage. This can only be justified if the early instruction is of a practical nature, such as is likely to be of service to a boy leaving school, as most boys do, after passing Standard V.

The same tendency to lose sight of practical utility is exhibited in other parts of the prescribed curriculum in arithmetic. Interest, for example, is of much less practical use to the ordinary artisan than elementary mensuration, and yet the former finds a place in the school course in preference to the latter. Decimal fractions, again, have not the practical importance in a country like ours, where the decimal system of money and measurements is unknown, which would justify the time devoted to their study; and in a merely scientific aspect, the proper place of decimals would be at the beginning of the course, under the head of "Notation."

It seems to be beyond doubt that our arithmetical course in the common school ought to be guided by considerations of *practical utility* chiefly, if not exclusively. And our estimate of practical utility should be based on the use to be made of arithmetic by the great majority of our pupils in after-life. Nor need we fear that the proper mental training which arithmetic can give will be lost by our adherence to this principle; the ordinary practical rules, if intelligently taught and understood, afford ample material for this training.

The first step in the formal teaching of fractions is to make quite clear the **meaning of the symbols used**, or to give the idea of a fraction and its notation. For this, concrete examples are necessary. But in the lessons given on this subject, both in books on teaching and as oral lessons by teachers, it seems to be assumed that children have wrought through the compound rules without having formed such ideas at all. Now, as a matter of fact, the idea of a fraction is necessary to the understanding of our symbols for a farthing or a halfpenny; and not only the idea of a fraction, but the knowledge that  $\frac{2}{4} = \frac{1}{2}$ , and that  $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$ . It is impossible to teach intelligently the reduction and compound addition of money without explaining the meaning of such symbols and operations. To begin therefore by assuming a class in Standard IV. or V. to be ignorant of the idea of a



fraction, argues unintelligent work at an earlier stage ; or if the class has been properly taught at the earlier stage, it makes the blunder of not connecting the present subject with those already known. It is only when the class is a very young one indeed that it would be appropriate to follow the plan of going through the actual halving of an apple or a potato in order to give the class the idea of  $\frac{1}{2}$ . And it may be added, that if such illustrations are used at this stage, the parts should also be weighed, in order to make it clear that the two parts are not really halves unless they are equal. Illustrations which are below the mental level of a class are as useless as those which are above it.

The most convenient **concrete object** for the early systematic lessons in fractions is a measured line drawn on the blackboard, and divided into various parts—half, third, fourth, etc. This simple apparatus can be used to illustrate the meaning of the symbols used in fractions, and also to represent in a graphic way what the class already know of halves and fourths, and the like.

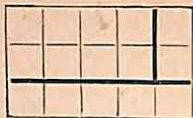
The same simple apparatus will serve to show the equivalence of, say,  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{4}{8}$ ,  $\frac{3}{6}$ , and the like, and so to give an intelligent grasp of the rule for changing fractions to any desired denominator. At this stage the usual rule for G.C.M. and L.C.M. need not be used. The examples should all be such as have denominators which can be dealt with by inspection—that is to say, numbers not more than 100. And when the stage is reached where larger numbers must be used, the method of resolving them into factors should be employed whenever possible, rather than the more cumbrous rule.

The teaching of fractions practically consists of giving a grasp of the four simple rules as applied to them—of performing the operations represented by +, −, ×, and ÷.

Addition and subtraction present only one difficulty—children are apt to attempt the addition or subtraction of fractions of different denominations. To correct this it may sometimes be necessary to have the denominators *written in words*. This will impress on the class the fact that for present purposes these denominators are, as their name implies, merely *names*, showing the kind of thing to be added.

For the explanation of multiplication, a simple blackboard diagram is again useful. This diagram is most instructive when drawn as a rect-

angle, though the straight line may also be used. Suppose the example chosen be  $\frac{2}{3} \times \frac{4}{5}$ . The rectangle will represent 1. Divide it vertically into 5 equal parts and horizontally into 3. Each section of the 5 is now divided into 3, and the whole figure into 15 equal parts.  $\frac{2}{3}$  of the whole would contain 10 such parts, but only  $\frac{4}{5}$  or 4 vertical parts of that segment are in question at present, and are seen at once to be 8



of the 15 small sections; hence  $\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$ . The same diagram can be used for finding the product of any number of thirds and fifths. By varying the diagram, the principle is easily seen that the new denominator is equal to the product of the two denominators; that is, the unit has been divided into *thirds of fifths*. And the number of such parts in the result is either two rows of four, or four rows of two, which gives the remaining part of the rule, that the new numerator is equal to the product of the numerators. After some illustrated examples, and others wrought without illustration by the pupils, the principle of cancelling may be introduced.

The rule for division of fractions is generally less easy to understand. It may be best introduced by making the dividend a whole number at first, so as to fix attention on the divisor. It may be approached in this way:— $60 \div 10 = 6$ , but  $60 \div 1 = 60$ —that is, a divisor equal to one-tenth of the former gives an answer ten times greater. A divisor one-tenth of the second will give an answer ten times greater still—that is,  $60 \div \frac{1}{10} = 600$ ; and from this the pupils readily see that to divide by  $\frac{1}{10}$  gives the same result as to multiply by 10. This is easily seen to be the converse of the fact already known, that to multiply by  $\frac{1}{10}$  is really to divide by 10.

The next step is to divide by a fraction whose numerator is greater than unity, such as  $\frac{3}{10}$ . Returning to the example chosen,  $60 \div \frac{3}{10}$  will give a result three times too great, as the divisor  $\frac{3}{10}$  is only one-third of the proper divisor  $\frac{1}{10}$ ; hence the result, 600, has to be divided by 3. So the division of 60 by  $\frac{3}{10}$  is completely performed when 60 is multiplied by 10 and the result divided by 3—that is,  $60 \div \frac{3}{10}$  is the same as  $60 \times \frac{10}{3}$ . A few such easy parallels between multiplying and dividing will serve as an induction for the rule that to divide by a fraction we multiply by its reciprocal. And this rule holds good whether the dividend be a whole number or not.

Another method of illustrating the rule may be based on the principle that division is a shortened form of subtraction. Take a foot-rule or draw a line representing one on the blackboard. The whole line represents 12 inches or equal divisions. To divide by 2 is to find out how often 2 inches may be taken away from 12; and the answer is 6 times. Divide next by 1, and in the same way the answer is 12 times. Divide next by  $\frac{1}{2}$ . A thoughtless class will be almost sure to give the answer at first as 6. It may be necessary, therefore, to remind them of the subtraction principle; the question really is, How often can half an inch be subtracted from 12 inches? Thus stated,



the answer will be given as 24 times. If  $\frac{1}{3}$  is the divisor, 36 times, if  $\frac{1}{4}$ , 48 times, and if  $\frac{1}{5}$ , 16 times, will now be readily given as answer. Write these down on the blackboard, and the same rule can be deduced—that the simplest way to divide is to invert the divisor and multiply.

**Complex fractions**, as they are usually called, form the best test of the pupil's grasp of the four simple rules as applied to fractions. Errors in the solving or simplification of complex fractions are generally due to a neglect of two general rules:—  
(1.) + and - are to be treated as separating the quantities between which they stand;  $\times$  and  $\div$  as binding them together. (2.) In simplifying a complex fraction, re-write the whole fraction at each stage of the simplification. Almost every serious error in dealing with such fractions is due to the neglect of one or both of these rules.

As an example of the first rule, such a series as  $\frac{1}{2} + \frac{1}{3} \times \frac{1}{4} \div \frac{1}{5} - \frac{1}{6} \times \frac{1}{7}$  can only be rightly grouped in one way— $\frac{1}{2} + (\frac{1}{3} \times \frac{1}{4} \div \frac{1}{5}) - (\frac{1}{6} \times \frac{1}{7})$ . To begin by adding  $\frac{1}{2} + \frac{1}{3}$  is quite inadmissible.

The reason for the second rule is plain. In dealing with the various segments of a large complex fraction, the only safety from confusion lies in keeping those segments in their relative places, separated by the appropriate signs, until each part has been reduced to a simple fraction. Any other method is more liable to lead to error, and makes it almost impossible for the teacher or examiner to detect the stage at which the error appeared in the working.

### Decimals.

At whatever stage the teaching of decimals may be introduced, the most natural starting-point is the fundamental principle of our notation—that of the **local value** of the figures. Thus, in 222 only one of the figures has the value of 2. The others mean  $2 \times 10$  and  $2 \times 10 \times 10$  respectively. Each figure is ten times greater than it would be if one place farther to the right, or one-tenth of what it would be one place farther to the left. On the same principle, we may write a series to the right of the units place, using some mark to show which place is counted as units. (The mark used is of course a point placed to its right.) 2.222 will then mean  $2 + 2 \times \frac{1}{10} + 2 \times \frac{1}{10} \times \frac{1}{10} + 2 \times \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10}$ , or  $2 + \frac{2}{10} + \frac{2}{100} + \frac{2}{1000}$ .

As soon as the principle of decimal notation has been clearly

grasped, a large number of mental exercises should be given in multiplying and dividing decimal fractions by 10 and powers of 10; the result in each case is merely to shift the decimal point one or more places to the right or to the left. This will help to fix the meaning of the point, and will give some facility in dealing with this unfamiliar form of fractional notation. In order still further to ensure that the idea is grasped, a number of concrete illustrations should be given, by dealing with sums of money expressed in decimal form. £·5, £·05, ·25s., ·75d., and the like, should be changed mentally from the decimal to the common form, and *vice versa*. Care should be taken to avoid sums that involve recurring decimals at this stage.

In the teaching of the four simple rules applied to decimals, two principles of illustration must be kept in view—(1) **illustration from the decimal system**, or the principle of the local value of figures, which is the basis of our arithmetical notation; and (2) **illustration from vulgar fractions**, whose rules are already known.

The rule for placing decimals preparatory to addition and subtraction should be shown to be the same as in simple addition and subtraction—units, tenths, hundredths, etc., in their respective columns, just as units, tens, and hundreds. The addition begins at the lowest denomination, in order to allow of carrying up the tens, as in simple addition. But in order to connect the fractional meaning of decimals with the idea of fractions as already understood in the form of vulgar fractions, the early addition exercises should be performed in *both systems of notation*. The results will be seen to be of the same value in both forms.

The rule for multiplication should also be explained in connection with the notation of vulgar fractions. It does not seem clear at first why  $3 \times 7$  should give two decimal places in the answer—·21, instead of 2·1. But if 3 be written as  $\frac{3}{10}$ , and 7 as  $\frac{7}{10}$ , the answer is seen at once to be  $\frac{21}{100}$ , or ·21. A few similar examples will enable the pupil to deduce the rule that the number of decimal places in the answer must be the sum of the number of places in both factors. Mixed numbers, reduced to the form of improper fractions, should also be used in these illustrations.

The placing of the point in division of decimals will need more care. The principle must first be thoroughly explained and illustrated that multiplying or dividing *both the divisor and the dividend* by any number does not affect the quotient. This may be shown to be the principle underlying the familiar process of cancelling, as used in former rules. The convenience must next be demonstrated of multiplying both divisor



and dividend by such a power of 10 as will *make the divisor a whole number*; then the fractional part of the answer will commence when the integral part of the dividend has been exhausted and the first decimal place has been taken down. A few examples should be *prepared* for division in this way before the actual dividing is performed by the class. Thus  $2.5 \div .5$  is the same as  $25 \div 5$  (multiplying by 10);  $3.125 \div .01 = 312.5 \div 1$ ;  $5 \div .005 = 5000 \div 5$ , and so on.

The fact that decimal fractions may be expressed in the ordinary or vulgar notation has been already made use of. The converse of this—that all vulgar fractions have an equivalent in decimal form—may be partly explained before the rules now discussed, but its full demonstration involves the use of **repeating decimals**, and on this account it may be left over to a later stage. Only those vulgar fractions can be converted into finite decimals whose numerators have 5 and 2 as their prime factors. Wherever the other prime numbers occur as factors, 3, 7, 11, 13, etc., the equivalent decimal fraction is a repeating or circulating decimal.

The reason of this is plain, for a decimal fraction is really one whose denomination is some power of 10, and the prime factors of 10 are 2 and 5. If any other prime number enters as a factor into the denominator, and the fraction is in its lowest terms, no amount of manipulation will convert that fraction into one with a power of 10 as its denominator.

The rule for changing a vulgar fraction into decimal form may be simply put thus: "Perform the division indicated by the position of the two members of the fraction."  $\frac{3}{4}$  means  $3 \div 4$ ; and to express it in a decimal form, we have simply to divide the 3 by the 4, as the horizontal line between them indicates. A more common explanation is to multiply both parts by a number which will make the denominator a power of 10—25 in this case—and re-write the new denominator in decimal form; or to multiply both parts by some power of 10, and divide by the 4.  $\frac{3}{4} = \frac{75}{100}$ ; dividing by 4 we get  $\frac{18.75}{100}$ , or .75. This also illustrates the common rule in a general way.

In dealing with recurring decimals, such as the value of  $\frac{1}{3}$ , the pupil must first be allowed to carry the division of 1 by 3 far enough to satisfy himself that there is no hope of getting a complete answer in ordinary decimal notation. The need for a new symbol will then be felt; and this symbol must not be supplied until its need has been thus made practically clear.

The method of reducing a given recurring decimal to a vulgar fraction should also be **explained**, and not merely a statement of the rule given. It is impossible, of course, in dealing with

such fractions, to explain their nature as the sum of an infinite geometrical series; but an easy arithmetical justification of the rule may be given, and will be appreciated by the pupils.

The pupil already knows that  $\cdot\dot{3}$  is not  $\frac{3}{10}$ , but  $\frac{3}{10} + \frac{3}{100} + \frac{3}{1000} +$  etc.; and the problem is to express this as a simple vulgar fraction. This plan may be found useful:—

$$\begin{array}{r} \cdot\dot{3} \times 10 = 3\cdot\dot{3} \\ \cdot\dot{3} \times 1 = \cdot\dot{3} \\ \hline \end{array}$$

Subtracting,  $\cdot\dot{3} \times 9 = 3$ ; and therefore  $\cdot\dot{3} = \frac{3}{9}$ .

A similar plan will serve for any number of repeating figures, provided the multiplier used is such a power of ten as will make the complete circle a whole number; thus, in the case of  $\cdot\dot{045}$ —

$$\begin{array}{r} \cdot\dot{045} \times 1000 = 45\cdot\dot{045} \\ \cdot\dot{045} \times 1 = \cdot\dot{045} \\ \hline \cdot\dot{045} \times 999 = 45 \end{array} ; \text{ and therefore } \cdot\dot{045} = \frac{45}{999}.$$

The rule for converting a "mixed repeater" into a vulgar fraction requires a slight modification. Such a number as  $\cdot 71\dot{6}45$  may serve as an illustration.

$$\begin{array}{r} \cdot 71\dot{6}45 \times 100000 = 71645\cdot\dot{6}45 \\ \cdot 71\dot{6}45 \times 100 = 71\cdot\dot{6}45 \\ \hline \cdot 71645 \times 99900 = 71574 \end{array} ; \text{ and therefore } \cdot 71\dot{6}45 = \frac{71574}{99900}.$$

Hence comes the ordinary rule—to subtract the finite part from the whole fraction for numerator, and write for denominator a 9 for every repeating figure, and a 0 for each finite figure.

It is essential that clear reasons should be given for these seemingly arbitrary rules, as the pupil is by this time at an age when he should be encouraged to expect a reason for any rule presented to him, and the rules themselves give some scope for useful mental training.

Decimals, and especially repeating decimals, are often handled in a somewhat nerveless fashion in school. Little or no practical use is made of them, and whenever possible the pupils are encouraged to use vulgar fractions rather than decimals. This is a mistake. Many calculations, such as those in compound interest, can be carried through in decimal form with advantage, and the final result alone expressed in the usual form of £ s. d. In a complex fraction, in which both vulgar and decimal fractions occur, and the pupil has the choice of either notation in working out, he should always prefer the decimal, unless there is a certainty of troublesome repeaters occurring.



In working with repeating decimals, children often set about converting them all into vulgar fractions, however simple they may be to manipulate. This is quite unnecessary, and often entails longer processes than keeping to the decimal form. The only case in which reduction to vulgar fractions is advisable is when *both* factors of a multiplication are repeaters, or when a *divisor* is a repeater. Practice should be given in dividing when the dividend repeats, and in multiplying when the multiplicand repeats, keeping to the decimal notation.

### Other Rules.

The various other rules taught in school do not seem to call for separate treatment, or to involve any new principle. But whatever rule is to be studied, it must be **first of all approached from the practical and common-sense side**. The examples first given should be such as can be solved mentally or by the application of rules already known, and any special method of using these fundamental rules should be then **deduced from the common-sense working out of actual simple problems**.

If the teacher is fortunate enough to have in his own hands the selection of the rules to be studied in his upper classes, his choice should be primarily determined by the question of **what is likely to be most useful to his pupils in after-life**. For a very small minority indeed there may be some use in learning compound interest and discount, with stocks, and the like. Practical exercises in the form of mensuration, according to our own and according to the metric system of measurement, will probably be of more value to the older boys. If the work thus selected for its practical value is taught intelligently, it will secure to the full all the mental discipline which the subject can afford; and to select rules which are valuable *only* for their disciplinary results is, in the common school at least, an educational blunder.

### Approximations.

In practical work, it is often of extreme importance to **attain rapidly a result which is approximately correct**; that is, one in which the working is correct so far as it goes, but in which

some detail or fractional quantity has been purposely omitted, or expressed in round numbers. This does not usually find any place in elementary text-books, or in examinations in arithmetic. But in ordinary calculations of a practical kind it has a high value. A decimal correct to the second decimal place may be enough; in calculating a price which amounts to thousands of pounds, pence and even shillings may be disregarded; a fractional quantity or a ratio represented by a fraction with three or four figures in each member may be expressed with sufficient accuracy in a fraction with one figure in each; and so on. The intelligence of senior classes may be very profitably exercised in finding out the ways in which calculations can be simplified by the neglect of what is unimportant.

In mental exercises this principle may be freely used, especially in such an exercise as valuing a long decimal fraction of £1. The first decimal place represents florins, being equal to  $\frac{1}{10}$  of the unit. The second represents nearly  $2\frac{1}{2}$ d., being  $\frac{1}{100}$  of the unit, and the third nearly  $\frac{1}{4}$ d., being  $\frac{1}{1000}$  of the unit. Thus '4583 of £1 is equal to 2s.  $\times$  4 +  $2\frac{1}{2}$ d.  $\times$  5 +  $\frac{1}{4}$ d.  $\times$  8 nearly, while the 3 is only  $\frac{3}{1000}$  of  $\frac{1}{4}$ d. nearly, and may be entirely neglected. The answer thus obtained by inspection is 8s. + 1s.  $0\frac{1}{2}$ d. + 2d., or 9s.  $2\frac{1}{2}$ d., which is near enough to the correct value for most practical purposes. The rules for finding approximations to larger vulgar fractions, and for contracted multiplication of decimals, should certainly be taught.

### Mental Arithmetic.

Mental arithmetic is too often regarded as a mere auxiliary to the everlasting slate-work over which so much time is spent—one may even say misspent. The more correct view would be to treat slate-work as an auxiliary to mental calculation. Again, mental arithmetic is not a different kind of arithmetic, to be wrought by special short-hand methods. **Every short method taught for mental use should also be used in slate-work**, for the short method is always the correct one to use in any calculation. If, for example, a class has been taught that the short method of multiplying by 25 is to divide by 4, adding two ciphers to the dividend, the class should use this method in the slate-work, instead of first multiplying by the 5 and then by the 2 (20), and lastly adding together the two partial pro-



ducts. But nothing is more common than to find the short method in use for mental work and the long method for slate-work. A pupil who will calculate interest mentally from the basis that 5 per cent. is equal to a shilling in the pound will often work the same kind of problem on his slate by the method of multiplying by 5 and dividing by 100.

In the higher classes it is well to dispense entirely with the slate, and require the pupils to perform all subsidiary calculations on the margin of their exercise book or paper. And the highest value should be awarded to an exercise only when the calculation is made in the clearest and shortest manner.

Two distinct aims must be kept in view in mental work—(1) **rapidity of working**, and (2) cultivating the power of **keeping increasingly large numbers before the mind** without the aid of slate or paper. The exercises must be such as to give practice in both these aspects of calculation, often separately, but sometimes also in combination.

**Mental work and blackboard work** should be frequently conjoined. Bills of parcels, proportion, fractions, and the like, should be frequently used in this way. The problem is to be written down in the usual form on the board, and the working to be done mentally, only the answer being put down at the end. This kind of exercise will be found valuable in giving practice which will lead to shortening slate-work or paper-work when written tests are given.

**Long or involved problems** should not be given orally. It is the *working* of the problem, not the *remembering of its terms*, which it is of value to have done mentally. And in young classes especially that form of exercise will be found best which **allows the pupils to give the greatest number of answers in a given time, and with the least talking on the teacher's part.** Hence the value of using specially constructed tables of numbers of various kinds, where the use of the pointer by the teacher is all that is required to guide the class in its work. There is perhaps no subject in which the amount of talking done by the teacher is of less service, or is a greater hindrance, than in the practice of mental arithmetic.

## GEOGRAPHY.

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### The Aim of School Geography.

**W**HEN we leave the mystic triangle of the "three R's," and approach the circle of the sciences, the first place in the common-school course is naturally awarded to geography. Some knowledge of geography we must acquire, however limited be the area to which our knowledge applies. A wider knowledge is frequently of practical use in life, and is always a source of intellectual pleasure; and the better we can lay the foundations of such knowledge during school life the more firmly will that school life be welded to the working life of our pupils.

Our method in teaching geography will depend, as in the case of other subjects, chiefly on **what we mean to teach.** Geography in its most general sense is a description of the earth. But we must have something more definite as our aim. The earth may be described from so many different standpoints—astronomical, geological, physical, chemical, botanical, zoological, ethnographical, historical, and the like. It is not any one of these aspects that we must keep in view for school purposes, and yet none of them must be quite lost sight of. Our aim must be to give some knowledge of **the earth as our dwelling-place, and of those who dwell on it.**

This view will at once show the reasonableness of the traditional connection in school work between geography and history. We have to deal with many places whose chief interest lies in their history, and indeed no country can be understood as it is without more or less knowledge of what it was. Thus we must attend not only to the physical, but also



to the historical, political, and industrial aspects of geography, taking these terms in a general sense.

Such a view of our subject will at once suggest the thought that we make by far too much of a mere knowledge of the map in our teaching. We begin by giving as correct ideas as we can of the meaning of a map; we study in detail the maps of various lands; and we are apt to think our work finished when our pupils can draw from memory the maps of the leading countries of the globe. There is great danger in such a scheme of instruction. Too often the knowledge of the map merely implies a knowledge of the shape or outline of the country. But for a useful knowledge of a country there is scarcely any fact of less importance than its shape, unless it be its exact size. It is only for the traveller that mere topography has much significance. For others a knowledge of the map is useful only as a short-hand memorandum of such facts as the relative position of mountain ranges and river lines, which in their turn determine variations of climate and soil, and so, indirectly, the industries and social conditions, the means of communication, and all the other facts which give each particular country a certain character and certain relations to the other countries of the world. The knowledge of the map itself is so definite, so easily taught, and so easily tested, that there is much danger of its usurping an undue and fictitious importance in the teaching of geography.

The knowledge to be aimed at in the teaching of this subject is often described, and correctly so, as the **kind of knowledge one would gain from living in the country we are studying.** The question is, then, what knowledge would be obtained, say, about India, by one living there—always remembering that the “one” in question is a child of school age? It would certainly not be the extent, boundaries, capes, bays, mountains, rivers, provinces, and chief cities, with their population. He would see people of an unusual appearance as to complexion, dress, and language, employed in occupations different from those he is familiar with. He would live in an unusual style of house, eat food of an unfamiliar kind, and experience quite unusual

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weather, amid a landscape of an unfamiliar character. After a year's sojourn in the country, he would be able to tell us many very interesting facts about the social life and occupations of the people, and would, in short, have a more intelligent and valuable knowledge of India than most people who have not lived there. But his companions who had stayed at home and gone to school would easily beat him in an examination on the geography of India; he would have got more marks had he studied his atlas instead of going to see the country.

It would, of course, be easy to push such a contrast too far. It is evident that the two kinds of knowledge could be united, and it is no less evident that they *should* be united. Our supposed young friend ought to make himself familiar with the map, and by doing so he would be able to make his knowledge of the country more scientific; the latitude and the physical configuration of the country would suggest reasons for many things he had observed but not fully understood, and would help to transform his knowledge into science.

The point to be insisted on is this, that the wisdom of beginning with the map is at least doubtful, while beginning and ending with the map is undoubted folly. Instead of trying to teach young children the meaning of a map, and the difference between a map and a picture, we should **begin with the picture**, and get him to imagine as much as possible of what it represents. Pictures of the people, their houses, their occupations, the landscapes amid which they live and work, and of everything which can be pictorially represented, should form the groundwork of instruction about a foreign land. Typical scenes should be selected, so as to enlarge the knowledge through the medium of the imagination—scenes of life in warmer countries and in colder countries; scenes by the sea-shore, and scenes among the mountains; scenes in forest lands, cultivated lands, prairies, and deserts; and scenes in his own land first of all—the more familiar first, and then the less familiar. These should form the basis of early geographical teaching; and when the imagination has been stimulated by these, and the memory pleasantly stored with real information, it will be time enough to give the map as a kind of short-hand symbol to recall and connect all that has been learned. The map will then have a



real meaning and suggestiveness, and there will be no more danger of the pupil confusing it with a picture than with the actual country it represents.

### Early Lessons.

In teaching history, most teachers now put off any attempt at teaching the chronology of a special period until a year or two has been spent in the study of a series of interesting stories of historical persons or events. This preparatory course is rightly designed to give the pupils the power of **picturing in imagination** the events of other times than our own. The same rule should hold in geography. **A year or two should be spent in a series of lessons designed to cultivate the power of picturing in imagination other places than our own.** For until the imagination has been thus awakened and developed, exact information of a topographical nature is merely a set of symbols which have no conceivable meaning to the child. The basis of such lessons should be (1) **a very full series of pictures**—pictures of the people, buildings, landscapes, birds, beasts, fishes, and plants—of **various important or typical countries**; and (2) **a good collection of the productions of such countries**, especially those imported by us, with models or specimens, so far as obtainable, of **things used by the people**—houses, boats, tools, weapons, and the like—from the school museum; for every school where real instruction is valued has at least the nucleus of a museum for illustrating object lessons, and every school museum should have a geographical as well as an industrial side. Nor should such illustrations be confined to the earlier stages of our teaching. They should form an essential part of our apparatus all through the school curriculum.

With a prescribed geographical course, it is not at present possible to teach geography entirely on these lines, however reasonable they may appear to the teacher; but the apparatus here mentioned is none the less necessary for the illustration of each successive country which is studied.

### Explanation of a Map.

Descending now from what we should *like* to teach to what we *must* teach, the problem of maps and plans first faces us.

The idea of a plan is not at first an easy one to grasp, and in the *drawing* course for schools it is wisely left over for a considerable time. The simplest way is to **begin with the table** in front of the class, having arranged on it two or three things such as a book, an inkstand, or one or two drawing models from a senior room. Such models as a cone or a pyramid should be preferred, on account of their plan differing so much from their actual shape. The table may first have a line drawn through its middle point lengthways, and another across, so as to divide it into four equal parts. If the table is a small one, so much the better, for the teacher will be able to draw his first plan of it on the blackboard to the actual scale, the **measurements being made by the pupils themselves**. Having drawn an oblong of the proper length and breadth, and represented on it the two medial lines drawn on the table, the teacher next gets from the pupils the measurements of the bases of the models on it, and their distance from the two medial lines, or from two contiguous edges of the table. Then if the blackboard be a movable one, it should be held horizontally beside the table, and the pupils will see for themselves the relation between the actual form of objects and their plan. The lesson may be several times repeated, with the objects on the table or their position varied each time.

The second stage is to introduce **the idea of scale**. The simplest to begin with will be half the actual size, or six inches to the foot. After each measurement made by the pupils, they should be required to inform the teacher **what number of inches the line will require to be on the plan**. Afterwards a smaller scale such as three inches to the foot may be used, and the two plans of varying scale may be drawn side by side on the board.

The next step will be to begin **the plan of the class-room**. Every measurement should again be made by the class with a suitable tape measure. The side and end wall should be measured, and the pupils asked to suggest such a scale as will enable the plan to be put on the board—such as one inch to the foot, or in large rooms half an inch. For the first lesson,



only the walls, with the position of doors, windows, and fire-place, should be attempted. This plan, or its measurements, should be preserved for the next lesson, when the position of the teacher's table and the rows of desks may be ascertained and represented.

These lessons should be continued as long as may be necessary to make clear the two points involved—(1) the meaning of a plan, and (2) the idea of scale, as determined by the size of the surface to be drawn on compared with the size of the surface to be represented. The teacher may proceed next to include on his plan certain broad features outside the room, such as the direction of the passages leading to it, and the cloak-rooms. At this stage exact measurements may be dispensed with, and the length of the room itself taken as the standard.

It is quite unnecessary in the case of a large school to proceed to draw the plan of all the rooms. The most instructive exercise will be to give merely the block-plan of the school, marking on it the class-room in its general proportion to the rest of the building, and then to draw the plan of the playground. This will again necessitate a change of scale, in itself a very important exercise.

To this smaller block-plan should be next added the chief lines of street or road by which access is gained to the school by the pupils; and here it will be advisable to introduce the idea of the cardinal points of the compass.

The simplest method of doing so, and the method which will always be of most practical use to the pupils in after-life, is to refer to the position of the sun and of the pupil's shadow at mid-day.

Some teachers have a meridian line drawn or marked in some way on the floor or roof of the class-room. This only applies to the particular room where it is marked, and does not give any power of determining that line by the pupils themselves in any other situation. And so long as the lessons are confined to the plan of the room alone, it is not the meridian line but the idea of scale that is the important point.

In further exercises on plans, the block which represents the school will be arranged in the conventional order, with the north to the top of the blackboard; but the teacher should be careful to make it clear that this is merely a conventional arrangement.

A prepared map of the district of the town or country, immediately surrounding the school should next be used, on a scale large enough to show the shape of the playground, as a transition to the use of maps in which the scale will not permit of showing more than the position even of the town or village itself. This may mark the conclusion of the series of exercises, and the pupils should then have a fair knowledge, so far as is possible at their age, of what a map means.

### Geographical Terms.

The next series of lessons will deal with the **meaning of the common geographical terms**—hill, river, bay, and the like—and **their conventional symbols on a map**. At this stage the country teacher has an enormous advantage over his brethren in the city, and the teacher in a seaport town has a considerable advantage over those in many inland towns. Geographical terms represent ideas which cannot be correctly or intelligently formed without the objects referred to being actually seen. The class may be able to give definitions glibly enough, and yet not be in possession of the corresponding ideas. **Good pictures and models are the best substitute for the actual things**, and should be freely used.

Along with the picture and description of the thing should come the **conventional representation of it on the map**, so that each lesson should give the pupils an increased power of interpreting a physical map. Any suitable physical feature of the district should be freely referred to for illustration, however imperfectly it may represent the type of feature under consideration.

**A large wooden tray and a few handfuls of sand** will do much to help in these lessons. It may be used in such a way as to help materially in giving intelligent conceptions of such features as hills, mountain chains and peaks, bays, capes, and islands. **Imaginary landscapes should be constructed in sand by the children**, and the practical hand-work implied in so doing will fix interest and attention. Whenever such a landscape has been modelled, **the map of it should be drawn on the**



blackboard, so that increasing familiarity with the meaning of a physical map may be given. A model in clay is easily constructed, and is also more permanent, so that it can be used for several successive lessons. If the district presents any marked physical features, the teacher will find it of great service to construct a rough model of the district itself. Many teachers use a model of this kind—a somewhat exaggerated relief-map, which forms a useful transition step to the flat paper map. Small objects may be fixed in the clay to represent houses, trees, etc., on an exaggerated scale, and when dry the whole can be roughly coloured in tints somewhat approaching those of nature.

Children take great interest in such models, especially when allowed to assist in their construction, and anything which excites interest is of the highest value in school work. Some teachers have caused a very lasting impression of a volcano, for example, by embedding in the sand model of a hill a small cone of damp gunpowder, and then setting fire to it. The eruption which resulted was, if not strictly in accordance with the laws of volcanic action, a great deal more valuable for teaching purposes than an hour's talk to a young class. Others have illustrated the phenomena of rivers and watersheds by pouring an artificial rainfall from a watering-pot over the prepared clay model. The rivers behaved in a more natural way than the volcano referred to, and the experiment was entirely on the right lines for mental training.

In teaching the meaning of geographical terms, it is of much importance to show the relation of one set of features to another. An island should be thought of as the top of a partially submerged hill, a lake as a dammed-up river, and so on. The teacher can use a clay model and a small quantity of water to illustrate such facts in a practical way. And even with a young class some notion may thus be given of the action by which the physical features have been formed, such as the way in which rivers form valleys, or form islands at their mouths, and the way in which islands are affected by a gradual rising or sinking of the land in any district. For in teaching geographical definitions, as in teaching anything else, it is only by going a good deal wider than his actual subject that the teacher can give an intelligent view of that subject. To do good work up to any prescribed limit always implies going beyond that limit. We must aim above our mark in order to hit it.

The way in which mountains and rivers are related may be shown experimentally on the clay model, as already mentioned. The same point may be impressed by the use of the blackboard. The teacher may draw the map of an imaginary or real island or district, and mark on it all the important watersheds and hills. The pupils may then be required to put in the rivers which would probably be found there in their correct positions as regards these watersheds and coast-line. Or the exercise may be reversed. The teacher may draw the rivers flowing in various directions, and require the class to show the position of the watersheds. When these exercises have been done, the probable positions of seaports, and of lines of railway connecting these with other towns marked in the valleys, may be put in by the pupils, having regard to the slopes roughly indicated by the map.

### The Use of a Globe.

In teaching the topography of any country, the question of scale should again be referred to. The country should not only be shown detached, but in connection with other countries in a map of the continent, and also on a clearly-marked globe. The globe should be in frequent use in every class from the commencement of topographical teaching. In the more advanced classes this is obviously necessary, because many facts, such as ocean routes and the like, cannot be shown on a map with any degree of *accuracy*.

### Maps.

The kind of maps to be used is a question of great importance. It has been well said that in order to leave a clear impression on the memory a map should look empty. The maps hitherto used in schools have been too much of the nature of reference or library maps. For teaching purposes something much simpler, more distinct, and empty-looking will be found more serviceable. For teaching the physical features, a map should be used which presents these features alone. But it is a mistake to confine this map to one set of physical features—mountains alone, or rivers alone. These different sets of features



should always be shown conjointly, related as they are to one another. For political divisions and towns, a different map should be used, giving prominence to the political facts to be taught, and showing only the towns and divisions which are to be taught. No unmeaning or unexplained feature of any kind should be on the teaching map. It should be a representation of what is taught about the topography of the country ; no more, and no less.

In cases where the teacher is forced to use the ordinary crowded wall-maps, a liberal use of bold markings in coloured inks will help to show the features to which he wishes his class to attend—a course especially necessary with respect to towns.

The presence of the usual **boldly-printed names** which are found on most maps is a **great hindrance** to their usefulness. In using such maps with a class, the teacher can never tell whether the features are found out by the pupils from their relative position or by their names, though he may reasonably conclude that while the name is so conveniently prominent the pupils will seek no other means of identifying the place. **Maps without names** are coming more into use ; but many of them have by far **too many towns, etc., marked**, so that even the teacher himself may be excused for failing to recognize which of half a dozen dots in a given district represents the one town which he has mentioned to his class as important. In this case he should put a bold red circle round the towns he has referred to in his lesson, and neglect all the other dots.

The power of **drawing sketch-maps** to illustrate the lesson of the day is invaluable, and should be acquired by every teacher. But these rough sketches must be **accurate so far as they go**. Many teachers are too careless on this point. It is a good plan for the young teacher to have a small map in his hand to draw from, in order that he may not make blunders, and this simple plan will obviate the necessity of loading the memory with a multitude of proportions and details of outline ; for it must be remembered that many good teachers find it absolutely impossible to remember the shape of a district with such accuracy as to draw it correctly from memory. Of course, it is best to

draw from memory if possible ; but accuracy is more important for teaching purposes than the mere mode of drawing the sketch.

The habit of using **blackboards or slate-surface maps, with the outlines permanently traced**, so as to be gone over with chalk as required, is good so far as it goes. But it restricts the teacher to always drawing any given part of the map on the same scale, and on the same particular part of the board. It is better for the class to have the scale varied occasionally, and to have the district under study presented as a complete map for the time, while its relations to other districts are shown by sketches of larger portions on a smaller scale, or by the class map.

The scholars should also be in possession of good distinct maps, either in small atlases, or in their geographical text-book, and should have frequent practice in **drawing portions of these** on slate or on paper, to show the points mentioned in a given lesson. This exercise should precede the drawing of memory maps.

The drawing of **memory maps** is the most exacting test of the pupil's memory of topography. This drawing should be **taught**, not merely practised as an exercise in drawing. The proportions of the country should be studied, the exact trend of stretches of coast-line, rivers, and mountains, the relative positions and relative distances of important towns, and the like, so that the pupil can draw the map on any desired scale. Frequently this exercise seems to be performed as a mere drawing lesson, and pupils have been found who could draw a country with satisfactory accuracy of form, and yet could not name correctly the rivers and other features whose position they had indicated quite accurately.

### Industrial Maps.

Industrial maps are of much service in intelligent teaching. The position of **coal-fields**, of **leading industries**, so far as they are represented in special districts, of **main railway lines**, and of **steamship routes**, can all be shown on maps, and are by this means learned in their relation to the country as a whole. This



gives a much more intelligent view of the industrial facts regarding a country than the mere learning of lists of names.

### Statistical Charts.

Statistical charts are also of importance. If they cannot be obtained otherwise, the teacher must construct them for himself. Statistical tables, giving actual numbers, are of little or no use for class teaching. The important facts must be shown by the "graphic method." Instead of giving the actual population, say, of a series of important towns, squares should be drawn representing these towns, the size of these squares being in proportion to the actual numbers. So with such facts as the relative importance of our various imports, exports, or industries. Squares, or bold thick lines parallel to each other, should be drawn, their area or length being in proportion to the value of the imports, etc., in round numbers, such as millions of pounds. This is the only method of showing at a glance the relative importance of these various imports, and the method gives a much more intelligent and memorable knowledge of the facts than abstract numbers can do.

### Illustrations.

The illustrations which may be used, and which should be used all through the school course, are only limited by the ingenuity and skill of the teacher and the resources or liberality of the managers. Pictures and photographs are now easily obtainable, which may serve to give graphic ideas of distant scenes and places. The school museum will yield specimens to illustrate manufactures. Curios from distant lands are often found in such museums, contributed by former pupils, or by those who have friends in foreign countries; and these will serve to awaken interest in those places, even if they do not throw much light on their characteristics. The class excursion has little or no place in the teaching of geography in this country, but in many other countries it is found one of the most valuable means of showing what geography really means. The optical lantern is coming into more general use in well-equipped schools, and this

forms one of the best means of showing pictures and photographs to a large class. In schools where such a lantern has been provided, it is found that the interest, and consequently the intelligence, shown in the geography lessons have been much stimulated. The children enjoy a "magic-lantern" so much that they do not realize the fact that they are being instructed. And it is a fact, in accordance with well-known psychological laws, that a picture shown by this means, where the actual picture is the only thing at the time present to sight, makes a clearer impression on the memory than the ordinary wall-picture which is in more common use. The cheapness with which lantern-slides can be purchased or hired, or even made by the ingenious teacher, seems to give promise of this kind of illustration becoming more and more generally used.

Short newspaper extracts and magazine articles may be used with profit in senior classes in many schools, and the ordinary "shipping intelligence" column of a daily paper forms a convenient means, both of testing the general knowledge of a class, and of suggesting important practical lessons to the teacher.

The class reading-book generally contains many stories or descriptive lessons which can also be related to the geography lessons, and all such lessons should be made use of as illustrations of this subject.

There is no subject, in fact, which may be illustrated from so many different sides as geography, and there is none which should awaken so much interest in the pupils. For if our definition is correct—that geography means a study of the earth as our dwelling-place, and of those who dwell on it—there is hardly any fact to be met with which has not a more or less direct connection with the subject.



## HISTORY.

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### Why it should be Taught.

THE desire to know something of the past is probably as natural as the desire to know something about the future, and that may be taken as a very general desire indeed. So natural indeed is the wish to know the history of our race, that tribes which have no history have been under the necessity of inventing a history for themselves. Legend and myth take the place of written records. We are human, and nothing of human interest can be quite a matter of indifference to us. So we are apt to invent heroes to people the past, if we have no actual knowledge regarding actual heroes in that past. And if the mind be not stored with knowledge regarding the men of our own and other times whose lives ought to form subjects of interest for us—rather than have that vacuum which nature is said to abhor, we fill up the vacancy by taking an interest in the commonplace doings of our next-door neighbours. History of some kind we must have, to satisfy our natural craving.

The intellectual training which may be derived from a study of history is of the most valuable kind, though it cannot be obtained in all its fullness at the early period of school life. Yet even for children history has a unique value. Our pupils have their imagination and sympathy excited by the grand stories of the past. They are trained to habits of reasoning and reflection by watching the course of events, each leading to the other, and by tracing the development of our social life from stage to stage. And some degree of historical knowledge is necessary to the understanding of the present conditions

under which we live, and even to the understanding of the ordinary reading of the least studious among us. References to other times and other places occur in all our newspapers and books, and to make this intelligible and interesting, a certain amount of historical as well as geographical knowledge is necessary.

As regards moral training, history has likewise a high value. There is no sermon, it has been well said, so impressive as the life of a good man. The teacher will do well, therefore, to make much of the great lives which his history lessons may bring before his class. The moral lessons lie on the surface, and require little or no direct exhortation to strengthen their force. The contemplation of a good example is more powerful than many precepts.

History has a very direct bearing on practical life, and thus has a value above studies which merely convey information. Information is not education. A teacher who sees it to be his work as an educator to aid nature in turning his boys into *men*, will find the study of history a valuable help. Those boys will in a very few years have the making or marring of their country in their own hands. The man who desires to cultivate and develop a plant must begin by learning something of the laws of its growth; and those who have in their hands the development or the distortion of the growth of society and the state must necessarily learn first how the state has come to be what it is. Experiments based on mere opinion, unsupported by knowledge of the growth of the social organism, are always dangerous, and may be very injurious. History is the part of school work which has the most direct bearing on the pupil's future conduct as a citizen, and this fact lays a heavy responsibility on those who have to teach history.

History should not only be a preparation for the duties of citizenship; it should also be the foundation of an enlightened patriotism. Patriotism is an old-fashioned virtue, perhaps, but it holds that place in national life which self-respect does in the life of the individual. The weakening of either is an accompaniment and a symptom, if not a contributing cause, of sure



deterioration. The belief that our own country is the very best will do much to transform that idea into an actual fact; while the *desire* to make it the very best, which is a more enlightened form of patriotism, is a still more powerful means to the same end. The teacher should keep this aspect of the subject well in view. If he does so, he will find enough in the past to serve as a stimulus for the future, not in the direction of military glory or of commercial and intellectual achievement alone, but, still better, of that righteousness which exalteth a nation.

Thus much may well be aimed at in our school study of history. There is, of course, a vast field of higher study, in the antiquarian, political, and philosophical aspects of history, which lies quite beyond the pupil's scope. But these aspects also are of value to the teacher. The more profound, wide, and accurate his own knowledge is, the more simple, graphic, and effective will be his handling of the matter which his pupils have under their notice.

### Early Lessons.

The early stages of history teaching correspond very much to the early stages of geography teaching. Children have the same difficulty in understanding distant times that they have in understanding distant places. In each case the first steps must aim at **awakening and directing the power of imagination**. That power is very strong in young children; and if it is not directed so as to form right pictures, it will assuredly form wrong ones, which will long remain sources of erroneous thinking. Worse still, if no materials are supplied to the imagination, but only a mass of material to the memory, the subject will never become a means of education at all. There are few subjects which can be worse taught than history.

For the undeveloped mind, whether among uncivilized nations or among our younger pupils, history naturally takes the form of **story-telling**. The unlettered tribes have their legends of more than doubtful authority; we are better off in having at hand for our still unlettered youth a wealth of stories which are in all essential points true. But at first our history must be simply stories. This is the natural beginning of history.

Chronology is quite out of place for young children. They have no more notion of a century than of a millennium. For the first two or three years, therefore, the teacher's aim should be to picture for them some definite portion of the past, as it is revealed in the life of some great man, or in some famous event. The more romantic the better, for the sake of arousing interest. Everything depends on the teacher's power of making the pupils realize the scene, and for this purpose all kinds of historical pictures are valuable—portraits, pictures of buildings, of the dress and manners of the time, and the like. The point is to get the children to realize that *there have been other times than our own*, with more or less unlikeness to the time in which we live.

The stories need not be all biography. Any picturesque and instructive event may serve as a lesson, and even a famous saying, such as, "Not Angels but angels," or "England expects every man to do his duty." The stories, again, need not be taken exclusively from our own history. Alfred the Great forms a good subject, but some teachers might find it interesting to take a lesson from some incident in the life of Alexander the Great, or Peter the Great, as a change. And at the first there is no necessity for taking up the selected stories in their chronological order. Chronology at this stage simply does not exist for the children. A date is a number without a meaning. The scenes described happened "long ago," or "once upon a time," and that information is sufficient to satisfy any question which a young child will be likely to ask on that point.

### Systematic Study of History.

When children reach the intermediate standards they are usually expected to begin the systematic study of the history of their own country.

The common method has been to divide the nineteen centuries or so of British history into a series of periods, as marked off by the ruling dynasties, and to study these periods in detail, taking them in chronological order. The method is simple, and for an adult student it is the most natural one. It follows the fortunes of our country from stage to stage, and traces its growth in the natural order of development. But for children it has several drawbacks, not the least of which is the loss of the sense of unity in the story. There is also a loss of the sense of perspective, both as regards time and importance of events. By the time the modern period is reached, the earlier periods are often forgotten. And even if they are revised from time to time, the revision is that of the history of



definite periods rather than of a series of stages leading up to the present state of things.

The opposite method, the regressive, instead of the chronologically progressive, is sometimes advocated. It seems natural to begin with what is known, and work backwards to the less known and more remote. But to children the **present is not really known**, in the sense required for historical use. And it is very largely in order to make the present better known and understood that a history of the past is given. What is really known of the present can be as well used to illustrate and explain the unknown of the past as to explain the unknown of the present. And the distant period thus taught makes a natural starting-point for the next period, which depends on the former as cause on effect.

### The Concentric System.

The method which seems best suited for school purposes is that known as the concentric system. According to this method, **the whole history of the country** is first gone over in outline, **the leading events only being referred to**. The characteristic or critical points receive all the attention of the class, and the subsidiary and intermediate events which are connected with these are left over for future study. Next year **the class goes over the same ground, but in more detail**. The important landmarks are now known, and form the centres round which a circle of less important but still great events is grouped. **Next year again the same plan is followed**, most of the time being spent on the fuller details and less prominent events, always referred, however, to those formerly known as the centres of the various periods. In this way the **unity of the history and the march of events** are never lost sight of in the details.

The method may be compared to examining an object first with the naked eye; next with a magnifying glass, which brings out fuller details; and finally with a microscope, which shows a still more complete network of connected details overlying the general features. The common method is to begin with the microscope, and examine one part of the object fully before proceeding to the next. But this study of minute

structure is out of place until the general outlines and their relations have been grasped in a summary review.

This plan is attended with the best results where it is adopted. There is a completeness about the knowledge from the first. Succeeding years of study are necessarily connected with the outlines already given, and so nothing is forgot. Each year's course is dependent on the previous one, and explains it more fully. The sense of perspective is never lost, as the whole is always treated as a unity, and the significance of the important events becomes more and more fully understood in their relation to those subsidiary to them. Chronology becomes easier, as the new dates given have a distinct relation to those formerly learned; and in this way, when the date of a minor event is forgotten, it can be remembered *approximately* by the relation of that minor event to the major event with which it is connected in the pupil's mind. This method is likewise suited to the growth of the pupil's intelligence and insight, as all political and other details which require more mental power for their comprehension are naturally left over to the final course, and only the broad and graphic view of events is given in the earlier years. Thus the fact of the Norman Conquest, its general meaning, and its date, may be given at first. Next year, some reference may be added as to the leading persons concerned and the course of events leading up to and resulting from it. But the aspect of the Conquest which bears on the language, laws, and habits of the people will not be referred to until the pupil is older and more able to understand such matters.

The concentric system would seem to require at least three and perhaps four years' study to secure the best advantages. By the time a pupil has gone three or four times over the history of his country, each time with new light and interest instead of a mere rehearsal of previous work, he is likely to carry away with him a tolerably complete and connected view of the subject. The effect is very different from that produced by a study in detail of one portion after another during the same space of time.

The final year's work should be devoted to a study of our present-day institutions, laws, and social and commercial relationships. With such a connected study of the past as a ground-work, it will be comparatively easy to trace the growth of such institutions as our House of Commons through their various stages. There will be no difficulty in connecting one period with another, for they have never been presented otherwise than in connection.



### Dates.

Chronology is a very important feature of all teaching of history, when that history takes a connected view of the development of a country. For the early stages, when the teacher is aiming only at getting his class to realize distant times and their characteristics, chronology is of no importance. But as soon as he begins the study of the history of our own country as a unity, chronology must be taken into account and treated systematically. **There is nothing to be said against the teaching of dates unless the teacher mistakes the teaching of dates for the teaching of history.** He has to tell his class both *what* happened and *when* it happened; and although the *when* is much less important than the *what* for the development of intellect and character, still the *when* is an integral part of the *what*. And when the teacher proceeds to give the *how* or *why*, the explanation of causes, and the connection of one event with another, the question of the *when* becomes not only important but essential. In geography, the latitude of a country and the relative position of its physical features are important and essential to an understanding of its climate and productions, and consequently of its industries and other characteristics, if these are to be intelligently understood. So in history the dates which fix the time-relations of connected events are necessary to a complete understanding of these events in their relations. But it is the events, and not the dates remembered as isolated facts, which are important.

For the intelligent use of chronology, charts which appeal to the eye are very useful, and, as in geography, these charts must be based on the idea of *scale*. For a general review of our history, the first chart may be an oblong, divided into equal sections representing the various centuries. This blank remains to be filled up, bit by bit; and as the various landmarks of each period are described, the names of the events are written down in their appropriate places in this table or chart. In this way the time-relations of the various events are fixed in the memory through the medium of the eye, and a more comprehensive view is taken of the whole than can be obtained by merely writing down the dates below each other as in the ordinary chronological lists.

For more detailed study in subsequent years, it will be necessary to

take part of this general chart and reproduce it on a larger scale, so as to have only one or two of the century divisions before the class at once. The chart may then be divided vertically into columns, each column to be devoted to a certain class of event, such as military, legislative, social and industrial, and the like. But whatever section is being dealt with, the landmarks formerly taught are to be kept prominently in their original place, and the other events grouped round them. Nothing that was once learned is to be omitted; it is to be presented in new and more detailed relations. The first chart may be compared to the map of a continent, and the later ones to the maps of the individual countries in it: only the broad features find a place on the former; on the latter they still find a place, but they are surrounded with additional details.

The names and dates of our successive kings have frequently been given a place in history teaching more prominent than their importance justifies. But the different reigns undoubtedly serve a good purpose in chronology. They are not too many to be remembered, and when remembered they serve as pegs on which to hang other events. The various centuries would serve the same end, but for the fact that a century is too long a period and contains too large a number of events. But the sequence of our sovereigns forms a useful time-framework into which we fit the events of the various reigns, even when the connection between the sovereign and the event is merely one of time.

Chronology has thus an important place in the teaching of history, and it should be taught scientifically and systematically. But, it may be again repeated, chronology is not history. It is merely the measurement by which we get the distance of one event from another. In some cases this distance is of little importance, in others of great importance, to an understanding of the events themselves. But in no case can the mere time-relation serve instead of an understanding of the events and their significance.

### Illustrations.

History is generally described as a difficult subject for children to understand. But its difficulty is by no means limited to children. It is a difficult subject for historians to understand. Only once or twice in the course of a century do we find a writer with the true historical insight who can interpret some bit of the past for us and make it living and real. But this is taking history in a different sense from what we usually mean when speaking of it as a school subject. The teacher has nothing to do with the real difficulties of the subject. His business is to accept the results of the historian, and convey to his class so much of them as is suited to their intelligence.



And if he does so in a careful and skilful manner, the history lesson will be no more difficult to understand than any tale of fact or fiction which he may tell. In selecting a fairy tale, the teacher is careful to choose one suited to the intelligence of the class; and in selecting a historical tale, the same principle must be kept in view.

In older classes, where the work is more systematic, two main principles have to be faithfully adhered to:—1. **The events must be pictured out so as to be clearly set before the children's imagination.** This means something more than making it merely understood. It is in this particular that the individual teacher's power comes most into prominence. Some teachers seem unable to make an event real to the children, and it may be suspected that the reason for this is partly because it has never been real to the teacher. He must realize, visualize, and live into the period or event himself, before he can present it in the desired form to the class. 2. **Every means must be taken to secure the interest of the class in the subjects studied.** These two principles are inter-related. Whatever makes a scene more vivid and real makes it more interesting, and whatever arouses interest in the scene arouses in the class that degree of mental activity which is needed to make them feel its reality.

**Abundant illustration is necessary** both for the development of imagination and for the arousing of interest. These illustrations may be of the most varied type. **Pictures** are the most obviously useful—portraits of the men mentioned; pictures of places and of famous incidents; pictures showing the dress and occupations or amusements. **Short stories or anecdotes, or actual sayings of the persons,** are of use and interest. Abundant reference to any events which happened in the children's own district help in the same way, and for this reason such events should be much more minutely discussed than their intrinsic importance would warrant. Teachers whose work lies near historical scenes, buildings, and monuments, have an advantage in this matter. **The literature of a period** is helpful for a senior class as a means of realizing

the life and the opinions of the people. It has, of course, a more important place, as being one of the aspects of the history to be studied; but apart from this, extracts may help in the clear conception of the period as a whole. **Historical ballads and songs** should be made use of for illustrative purposes, and in older classes **historical novels and plays**. Apart from the classical works of this kind, teachers will find hundreds of scenes in the numerous works of fiction now issued for boys and girls which are true enough to the history of the period to be of use in giving "local colour." These stories show **how people spoke and acted at a certain period**, whether the actual persons named in the story ever lived or not. This kind of material is much brighter and more interesting than the more solid and classical novels, and should be found in abundance in every school library.

Other forms of illustration may suggest themselves to the thoughtful teacher, and the more varied the better. But illustration there must be. It is just from the want of sufficient illustration that history has been found difficult to teach. If the text-book or summary contains all that the children receive in the way of historical teaching, the subject would be better left out of the programme. The words of the book may indeed be remembered, and their meaning as mere words understood, but the force of the whole is never realized without the most careful handling by the teacher in the way of illustrating and picturing forth the scenes mentioned. History from the text-book has much the same value as geography from the map. Each is a skeleton of dry bones, a framework into which the breath of life has not as yet been breathed; and without this breath of life they will not long remain even a framework—they will crumble into dust and be forgotten.



## ORAL TEACHING.

**T**HERE are various departments of school work which fall outside the scope of an elementary book such as the present, not because they are unimportant, but rather on account of their being too important or too technical to form part of the work of very young teachers. These departments of work may be classified as follows:—

1. Religious teaching.
2. Moral instruction and training, comprising the general government of the school, and formal lessons on moral subjects.
3. Kindergarten occupations, especially when unmixed with the ordinary school subjects, or the "three R's."
4. Manual training, in the æsthetic or the industrial aspect, including drawing, sewing, and "sloyd" in wood, card-board, or metal. To this head may be related singing, though not a manual subject, as being both technical and æsthetic.
5. Physical training, in the form of gymnastics and drill.

### Object or Gallery Lessons.

While these departments cannot be treated of here, there is one department of work which may embrace portions of any or all of them, and which forms a very important part of the training of pupil-teachers and students. That department is usually included under the general head of oral or object lessons, or gallery lessons. The name "object lesson" is of course only admissible when the lesson is on some object presented to the class. They are called gallery lessons from the fact that the gallery arrangement of seats gives the best opportunity for observation of the object presented; but unfortunately the size of the gallery and of the class frequently reduces the opportunity for observation to a minimum, and reduces the efficiency of the teaching to the same limit.

It is a common fallacy to suppose that object lessons can be given to huge classes such as a teacher would never attempt to manage with other lessons. The class can be more easily controlled simply because there is less activity developed. The children look and listen decorously, and repeat mechanically what they are told to say. The teaching of an object lesson to such a number seems more effective than any other kind of lesson would do, simply because the results cannot be so accurately measured. But with object lessons as with all others, as soon as a reasonable limit of number is exceeded, the value of the work done is in inverse proportion to the size of the class.

### The Aim of Object Lessons.

The aim of the oral lessons which now form part of the daily school work in every well-taught school is twofold:—1. To develop the child's powers of observation and reasoning. 2. To increase his intelligent knowledge of things. In other words, they share in the common aims of all school work, training and instruction, which combine to form education. Accordingly they should not be confined to the infant school, though they are frequently crowded out of the upper school by occupations of less educative value.

### Series of Lessons.

Oral lessons are most effective when arranged in series, so as to admit of revisal, and of gradual progress along selected lines of instruction. They lose much of their value when taken as isolated lessons.

For the infant school, the series might take the form of lessons in colour and form, common things in school and at home and in the streets, familiar animals and plants, and the like.

For junior standards (I., II., and III.) more detailed information about common things, animals, and plants; lessons introductory to the study of geography, as mentioned above; biographies and historical events, preparatory to the study of history.

For the higher standards, lessons in physical geography and physiology, dealing with the earth, water, and air; physiology of animals and plants; common trades and manufactures; and various subjects of a somewhat scientific nature.

Moral lessons, not lectures or sermons, suited to the age of the children, should be taken at every stage, and in the higher classes lessons on social economy, such as wealth, labour, commerce, and government, as well as lessons on the fundamental laws of health, based on some knowledge of physiology.



### Preparation for Oral Teaching.

All such lessons should be carefully prepared beforehand. However varied in subject, they agree in this, that the matter of the lesson is not before the pupils in printed form—there is **no text-book in the pupils' hands**. This is of course a great advantage, as the teacher can select whatever he thinks most beneficial for the class; but it makes imperative what is in other lessons also desirable—that **the teacher must study carefully what he is to teach**.

If the teacher does not thoroughly know the subject on which his course of lessons is being given, preparation is obviously needed. A good text-book dealing with the subject, or a reliable encyclopedia, will supply the facts. But if the teacher is already familiar with his subject, preparation is no less necessary, in order to select from the whole field of his knowledge the facts best suited to his class, and to determine what he is *not to teach*.

A very common fault is to try to teach too much, or, rather, to mention too many facts, about the subject of the lesson. This overcrowding merely obscures the lesson. A few broad facts or principles, clearly expressed, fully illustrated, and logically connected with each other and with common facts already known to the pupils, will always form the type of lesson which is most instructive and most educative, and therefore most easily remembered.

In dealing with any object, select the facts which are most important and most characteristic of that object. In teaching a lesson on copper, for example, it is a mistake to give prominence to such facts as that it is hard, heavy, malleable, ductile, and the like. These are qualities which it shares in common with many other metals, and should be taught rather in a lesson on metals than in a lesson on copper or any individual metal.

Avoid as far as possible uncommon and technical terms, unless the lesson is designed to illustrate the meaning of such terms. Hard words merely distract the attention from the essential facts. Young teachers are too apt to introduce such terms, merely because they make the lesson look more profound and scientific, or perhaps because they are sprinkled liberally over the pages of many books of so-called model lessons on objects. Technical words are quite properly used

in a scientific text-book or encyclopedia, which are entirely out of place in an oral lesson for children. The lesson is not to be taught as it stands in the book of reference, but the facts from the book have to be studied and assimilated by the teacher, and it is then his business to adapt them to the capacity of his class.

### Arrangement of Matter.

The arrangement of matter is no less important than its selection. This careful arrangement should not only apply to each individual lesson, but to the whole series as a series. The progression should be the natural one in learning—from the known to the less known or unknown—and so far as possible it should be a logical advance, in which each step is based upon a previous one as its ground or cause.

This natural teaching order is often neglected in object lessons. Nothing is more common than to find a lesson on some common substance begin with its various qualities, more or less obscure and unknown to the class; then to go through the processes of its preparation; and finally to bring in its uses, which are for the most part perfectly well known. The natural order, of course, would be to begin with those uses, and then to show what qualities in the substance make it suitable for such uses. This is not the best order for a scientific account such as the book of reference aims at giving, but is certainly the best for teaching children in a natural and logical way. It is the line of thought which an intelligent boy would follow if he began thinking about the substance for himself; and so it may be regarded as the order of discovery for children, although it may not be the order in which the various points were actually discovered about the substance. If we wish children to think about the common things around them, we should always begin with the substance as they see it in common use.

### Illustrations.

Much of the impressiveness of oral teaching depends on illustration. This illustration may be indefinitely varied, according to the kind of subject. It may be a mere passing reference to some well-known or previously taught subject—"Like so and so," or "Just the opposite of this or that thing." Again, we may use pictures and diagrams, such as are now to be found, to however inadequate an extent, in every school. For object lessons properly so called, specimens and actual objects are necessary, and should be used; they should be used in such a way as to get from them the greatest amount possible of prac-



tical knowledge, by examination and by simple experiments, and not kept merely for show. The blackboard is for all oral lessons the teacher's best aid.

Diagrams and drawings made by the teacher in presence of the class have a great value, on account of the interest which the children naturally take in seeing a thing done. The blackboard sketches, therefore, should be prepared for, or practised, but never actually drawn beforehand. The power of rapid sketching on the blackboard is absolutely essential to every teacher, and should be acquired at whatever expenditure of trouble. Slow drawing interrupts the course of the lesson, and both for that reason, and on account of the attitude which the teacher must assume while drawing, it forms a distinct peril to perfect discipline. Even when the teacher has a good picture provided to illustrate his subject, he must not assume that the picture will teach all that it might do to older people, and he will find it beneficial to sketch some portions of it on the board to call attention to what the picture really shows—such as, for example, the various details of certain parts of a flower which on the picture is only seen entire. Correctness of outline, at least to a certain degree, is essential; and it is unwise for the teacher to have to rub out and alter parts of his sketch, as this gives a very bad example to the class. If his visual memory is weak, he will do well to have in his hand a previously-prepared copy of what he means to draw.

The blackboard is also necessary for setting down in concise tabular form a summary of the lesson—the main facts to be remembered, and also any technical terms which *must* be used; and these jottings should form the basis of a rapid recapitulation of the lesson at its close. This concise summary should also form the “irreducible minimum” which every pupil is required to remember after the lesson is over, and to make use of in future lessons of the same series.

### Experiments.

As far as possible, all quasi-scientific lessons on common things—such as the series of lessons now called Elementary Science—should be accompanied by abundant simple experiments. But it is a mistake to regard these experiments as merely, or mainly, *illustrations* of the lesson, in the same sense as drawings are. They should rather hold the position that the diagram does in a geometrical theorem—they form the basis of reasoning, and not its illustration. If the order of teaching is to follow the natural order of discovery, the experiment should come first, and its explanation afterwards. Too often the scientific facts are first stated, and then illustrated or

proved by experiment. The pupils should never be asked to take the teacher's word for a truth which he can lead them to deduce from the actual object. The training of observation and reasoning will be better secured by the teacher performing some simple operation, and requiring the class to observe what happens, and to describe it accurately. He will, of course, warn them what kind of fact they are specially to watch for. Experiment has a much higher intellectual and educational value than mere illustration. This value will be still more enhanced if members of the class are allowed to conduct the experiments under the teacher's direction.

### Notes of Lessons.

For his own guidance the teacher, whether he be a young teacher or not, should write out full notes of his lesson beforehand. This will ensure his having the selected facts ready to hand for reference, and will also ensure their proper arrangement. All illustrations must be noted, in order that nothing may be omitted which can make the lesson more effective. And for convenience in future revisal or examination of work previously done, the date on which the lesson was given should also be noted. Pupil-teachers should be taught to regard the preparation of notes of their lessons as an essential part of oral teaching, and not merely an exercise to be practised in view of their own examinations.

These notes should be concise rather than elaborate. They should never be so full or detailed that adherence to them would hamper the free course of the lesson should any unexpected knowledge, or ignorance, be discovered in the class during the teaching. They should be mere outlines, but carefully planned, and with nothing omitted which is necessary to the elucidation of the subject.

A traditional form of such notes is an arrangement in parallel columns marked "Heads," "Matter," and "Method" respectively. This division has a very plausible sound, but somehow one never comes across a lesson in which these columns contain what they pretend to contain and nothing else. As a working arrangement, the traditional one is, in fact, impossible. Method embraces many things which cannot in reality be



separated from the matter, and other things which cannot be shown in any written notes. In attempting to keep to this scheme, young teachers generally either repeat most of the matter in the method column, or they record in that column merely a note of the illustrations to be used. The matter column, again, containing as it does that matter as arranged for teaching, is, to that extent at least, an indication of method likewise.

The vital points about a lesson are—(1) the matter to be taught, (2) its arrangement, and (3) the illustrations to be employed. The most natural scheme, therefore, would seem to be one showing these three things. A broad column, occupying most of the page, should contain the matter arranged in simple logical order, as it will be taught to the class. A narrow margin to the left should be kept for the heads or divisions; for these are of even more importance in writing notes of a lesson than in writing an essay, and what was said regarding that point under the head of composition applies here more fully. Another narrow column should be made on the right-hand side for making a note of all the illustrations to be used—references to former lessons or well-known things, diagrams, pictures, and the like. This arrangement has been found to work very well in practice. The column for "illustrations" is specially valuable for young teachers, as helping to remind them that illustration is a vital point of all teaching.

Questions to be asked should not be written down. It is not uncommon to see notes in which the proposed questions occupy a large space. Indeed, the notes read somewhat like a verbatim report of a lesson which has been taught. As a matter of fact, each question after the first in any section of the lesson depends on the answers previously received, and it is impossible to foresee what these will be. It is an understood axiom that questions are to be used when the children's knowledge is sufficient to allow of progress being made in that way, and that when the facts are quite new they must be told to the class. It is accordingly a waste of space to mention on the written notes that the teacher will tell this or that fact, and "elicit" the other. And it is generally impossible to decide beforehand precisely how much can be elicited and how much must be told.

Another time-honoured feature of notes of lessons is the "Introduction," coming as a preface to the "Lesson Proper." If the introduction is not part of the lesson proper, it has no proper place in the notes of that lesson. Its purpose generally seems to be to secure by some ingenious manoeuvre that some child shall mention the subject of lesson in answer to a question, and this is apparently regarded as a mark of greater skill than for the teacher to tell the class at once what is to be the subject of the lesson. The real use of an introductory question or remark is to arouse if possible a position of expectant attention in the pupils. But this is unnecessary when any object or picture can be shown, as the same purpose is served by the showing of it. Frequently a teacher who intends to give a lesson on, say, sugar, begins by asking what the pupils may have had for breakfast. Now, instead of leading the children to think of

the subject of lesson, such a question leads them to scatter their thoughts over all the various substances which may appear at their breakfast-table, and also, quite naturally perhaps, to listen to the answers their neighbours give, in order to find out what *they* had for breakfast. The "Introduction" does harm by suggesting a number of different ideas instead of fixing attention on one, besides being a useless waste of time. If the teacher's first question, in the case supposed, were, "What is sugar used for?" it would at least have this advantage, that every answer would have the merit of being connected with the subject in hand. It might transgress the common book arrangement of leaving "uses" to the end of the lesson, but it would at least conform to the rule of beginning with what is known.

In preparing notes of lessons in the ordinary subjects of instruction, the form recommended above for object lessons will require to be very much modified. In arithmetic, for example, the main part will be the examples to be wrought, and the subsidiary columns will show the various steps in the solution, with the headings, "What is wanted," and "How obtained," or something equivalent. In grammar lessons, also, the examples chosen will occupy the chief part of the space, and "Difficult points," or "Points to be attended to," will be noted in a side column, while the "Definition," if the lesson is an inductive one on some special kind of word or clause, will come at the end. For explanatory notes on the reading lesson, a jotting on the margin of the teacher's book will probably be sufficient to keep in view the various illustrations, explanations, or studies of words which are to be used.

### Teaching and Learning.

Viewed grammatically, the word "teach" is a transitive verb: used in the active voice, we say, "The teacher teaches the pupil;" and in the passive voice, "The pupil is taught by the teacher." The teacher, according to this aspect, is the active subject, and the pupil the passive object, in the process of teaching. It is to be feared that this view of the relation of teacher and pupil is sometimes accepted as being true in reality as well as in grammatical form. But such a view would be a dangerous fallacy. In the act of teaching there is no passivity possible on either side. We cannot say the pupil is taught unless it is also true that the pupil learns.

Teaching and learning are correlative terms. If the pupil is not actively learning, the teacher is not really teaching; he may be talking, lecturing, questioning, or explaining, with any degree of vigour, but he is not *teaching*. The amount which



the pupil learns is the exact measure of what the teacher teaches. A force is always measured by its results. In one sense, therefore, the teacher's work is to be measured absolutely by its results. Whether these results can be measured by any examination is a totally different question which does not concern us here.

There cannot be real teaching without learning, but there may be learning without teaching. Private study can do much, and home lessons are often expected to accomplish so much in certain subjects that the teacher confines himself to examining on work done at home. Home exercises are valuable for the purpose of giving independent practice to the pupil in work already explained and practised collectively in school, and such exercises should always be given in moderate quantity where practicable. But the teacher must never use home work as a means of relieving him of any part of his duty.

From this view of the relation between teaching and learning, it is at once clear that the best style of teaching is that which secures the greatest amount of effective thinking by the pupil. The thinking must be effective; it must lead to some definite result. If a difficulty is too great for the pupil to surmount, he may spend all day in thinking it over without learning anything.

If the teacher tries, on the other hand, to use his skill for the purpose of making the subject so plain that the difficulties are never really felt, there is no stimulus to thought on the part of the pupil. "There is no royal road to learning," is a very old maxim; and in the present day it may be interpreted to mean that if the road is made too smooth, there will be little learning. No difficulty should be explained until it has first been felt as a difficulty. In one sense it may be said that the teacher's work is not explanation of difficulties at all, but rather *presenting* difficulties to be explained by the pupils. But his skill is shown in this, that each difficulty brought forward and overcome forms the step to something beyond. The subjects are thus to be arranged so that the difficulties present themselves in a fairly conquerable series. The climbing must be done by steps, not by gliding along an inclined plane.

In the "good old days," the feature of the teaching was this, that the children received too little aid from the teacher, and were discouraged by difficulties which they were unable to solve. But those whose natural powers were strong enough to overcome these difficulties, earned to some purpose, and became all the stronger through the roughness of their climb. At the present day, when method is rampant in our schools and explanation is a fine art, the natural difficulties of learning have been artificially levelled so as to admit of apparently rapid progress. The temptation now is for a teacher to make his pupils' path smooth in order to get over the ground. The result is a weakening of the pupils' mental energy, and an absence in many cases of real, solid, permanent learning. This tendency is further strengthened by the confusion of education with instruction. The teacher's real work is not to put the pupil in possession of the results of other people's thoughts, but to develop in him the power of thinking, and instruction is only of value so far as it accomplishes this end. The mind is something to be trained, not to be stored with facts.

### Thoughts about Thinking.

There are many fundamental truths about learning, and the kind of thinking which results in real growth of mental power, which the young teacher cannot be expected to understand. But he should at once make a mental note to this effect, that in order to become a skilled workman in his craft he must know all that can be known of the laws of mind or psychology. Without this, the most enlightened rules of method are to him only so many "rules of thumb." He must not rest content with the old-fashioned theory of the mind as something which can be mapped out into a number of divisions, labelled "faculties," as psychology is sometimes presented to teachers. The mental science of last century is not good enough for the man whose life-work it is to mould the mental activities of the next generation. He must keep abreast of the science, and advance it if he can. Few have finer opportunities of doing so.

### Memory.

There is no more important distinction to be made in teaching than that between cram and the legitimate cultivation of memory, and that for two reasons: in practice, the exercise of memory frequently degenerates into cram; while in theoretical discussion, the denunciation of cram frequently obscures



the fact that the **cultivation of memory is an essential part of education**. Tenacity of memory is by no means an index of intellectual power, but a weak memory is a heavy handicap on thinking, while absence of memory power is equivalent to idiocy. What is essential to keep in mind is this, that facts and laws are to be remembered for practical use, and never for mere reproduction as from a storehouse. But the higher includes the lower, and unless a fact can be recalled, it cannot be made use of in a new train of thought.

This caution may be necessary to young teachers before we proceed to note a few principles underlying the art of presenting facts, necessary in view of future work, in their most memorable form. The power of doing so depends mainly on two things:—1. **The intensity or vividness** with which the train of thought was performed or the impression apprehended by the mind. 2. **The frequency** of its presentation to the mind.

Whatever is presented clearly to the mind at first is more easily recalled afterwards. Vague ideas are difficult to remember, or vanish entirely. But defects in the force of a first impression may be made up by frequent repetition. What we have often before our minds leaves a permanent trace through the mere force of its frequency. It may be said without much error that the skilful and intelligent teacher depends mainly on *clearness and vigour of apprehension* for producing the effect on memory, and the unskilful or careless relies chiefly on *frequent repetition*—often vain repetition, however, when tested by its effects.

One other obvious principle has to be laid down here: intense thought tends to result in action, and conversely the thought which is accompanied by the related action is more intense than the thought which is accompanied by physical passivity or repose. It is only by actually doing a thing that we learn and remember how to do it. After merely listening to an explanation we may suppose that we know a thing, but on trying to do the thing we often discover how vague and imperfect our previous ideas were. The more active doing we can secure from our pupils, the more intense and concentrated will be their thinking. And we have in addition the valuable stimulus arising from the natural interest they take in active doing. The value of manual training—

a form of education which is only beginning to be understood in its relation to mind training—depends both on the activity and on the interest which it excites.

In the case of automatic or habitual acts there is of course some modification of this statement necessary. These may be accompanied by no conscious thought. But that only becomes true after the process of learning the action, when thought has completed its "perfect work" as regards that particular kind of action.

### Practical Deductions.

There are various methods by which a teacher may impress on his pupils some new truth or chain of reasoning. In the light of what has just been said, we are now able to arrange these methods in an ascending scale of impressiveness; for what the teacher seeks in the training of memory is to find a method which will be sufficiently impressive to ensure accurate and ready reproduction of facts and laws for future use. This impressiveness, it may be again repeated, depends on the degree of activity of the *pupil's* mind, not on that of the teacher.

1. The teacher may tell the pupils the fact, or go through the reasoning process, while they listen to him. If the class is deeply interested in what they hear—if it be the announcement of a holiday, for example—this simple telling may be sufficient to secure its being remembered. But in general it may be said that this is the least efficient mode of teaching, and results in the least amount of thinking by the pupils.

2. Additional force is given if the teacher repeats the statement several times. This is a common device with teachers whose devices are few. It is good so far as it goes; but its weakness may be gathered from the fact that such a teacher will inform his class, in an injured tone, that he told them "at least fifty times," or told them "only yesterday," some fact which, nevertheless, a majority of them have managed to forget.

3. He may repeat the statement in different words. This ensures something more than mere listening on the part of the class, if they are to realize that both statements have the same meaning. But there is still too much time wasted and too little activity developed in the minds of the pupils.



4. The teacher may write on the blackboard his statement, or the gist of it. The impression is now made through the eye as well as the ear, and the double stimulus causes more mental activity in the class.

5. He may require the class, or some of them, to repeat the statement made. In this he has a guarantee of some real activity in the pupil, and the words at least are the more likely to be remembered on that account.

6. He may require the pupils to repeat the sense of his statement in their own words. This ensures that some independent thinking is being done, and is a great step in advance of any of the preceding methods. The exercise is one of more difficulty, which is equivalent to saying that it can only be done by independent reasoning, and not by mere verbal memory.

7. The teacher may require the pupils to write in their note-books the statement to be remembered. This is an exercise entailing a considerable amount of real mental and muscular activity; and it also appeals to visual memory, or memory through the eye, which is in most people much stronger than memory through the ear.

8. The same exercise may be done, but the statement written in different words by the pupils. This combines the advantages of the two preceding methods, and may be placed highest of the ordinary methods of securing that a fact stated shall be remembered.

Such methods as these may be used for the memorizing of any isolated statement of fact, or several of the methods may be combined. But in the connected teaching of most school subjects there are innumerable other devices which tend to give permanence to what is learned. All the devices which arouse interest in the class also secure the permanent acquisition of knowledge. Hence the value of a bright and attractive style and of copious illustration. All the methods by which the teacher can lead the class to the personal discovery of the truths he wishes to teach are valuable, both as arousing interest and as securing thorough understanding of these truths. In connected teaching of a subject there is no more sure aid

to memory than complete understanding. What we understand we can easily recall, even if it be forgot for the time, for we know how to reach it by the chain of reasoning which connects it with other things. A child may easily forget, for example, the direction of the earth's rotation if he knows it only as an isolated fact. But he can as easily recall it, if he can reason back to it from the fact that the sun seems to move from east to west.

From the general point of view, of course, any information which is not thus understood in its connection with other things is not a factor in education at all, and should have absolutely no place in school work; but at present we are dealing only with the question of how to ensure the remembering of what is learned.

### Questioning.

The time-honoured method of teaching by means of oral question and answer must be awarded the highest rank in respect of efficiency, and this view of it is justified by every consideration both of theory and practice. There is no subject to which the method may not be more or less fully applied. Even in the telling of a new story, there are many points where a passing question on its relation to something already known—some general principle or familiar fact bearing on the story—should be used, without interrupting the general course of the story. In most subjects the teacher will be able to throw the great bulk of his lesson into the form of question and answer.

1. Questioning secures thorough understanding of the subject. It is the natural mode of discovering new truths. The man who invents or discovers something new is not a mere passive observer of nature; he is the man who is aroused by what he sees to *put questions to himself* as to how certain things happen, or how one thing is related to another, or what would happen under certain other conditions. So the teacher's work is to suggest to his pupils the questions which a thoughtful boy would probably put to himself. It is his duty to see that the questions are neither aimless nor unanswerable. He may suggest a question, indeed, which is at the time unanswerable,



- but only for the purpose of making sure that a difficulty is really felt by the pupils, so that their interest may be aroused in its solution. He has then to suggest certain preliminary questions, which carry the pupils step by step towards the answer to that which was at first unanswerable, and thus he impresses on them the rational and logical bearings of the whole subject.

It is here that the skill of the teacher counts for most. And it is in view of this kind of work that it is so necessary for him to have a complete knowledge of the subject taught, and not a mere smattering of it. He must know the by-paths as well as the main roads.

It is evident that only those questions are useful which *can be answered* in some real sense by the class, and which also *require some thought* in order to be answered. A question which can be answered from mere memory has a certain value as a test of memory, and as a means of confirming the memory of that individual fact which forms the answer, but it is useless as a means of teaching, in the sense of giving an understanding of a subject.

- 2. Questioning arouses the feeling of individual responsibility in the pupils, and through this feeling interest is much quickened. The pupils feel that they are doing the work, and not the teacher in their stead. Hence the question should be put to the entire class, and not to one individual; every pupil must feel that he is called upon to find an answer to what is asked. At the same time, the answer should always be taken from one pupil, and not from the class simultaneously. Simultaneous reply tends to weaken the feeling of individual responsibility in those very pupils in whom it most requires to be stimulated. In classes where the habit of simultaneous reply prevails, the pupils are generally found to lose confidence in their own independent opinion, and will rarely attempt an answer unless in concert with their fellows.

Besides this, the question which will admit of being answered in the same words by the whole of the pupils is usually an ineffective one for teaching purposes, and one which can be answered entirely by memory. Thus the teacher who gets simultaneous answers from the class may be sure that his questions arouse little individual thought.

- 3. The act of answering a question requires the pupil to put his thought into a clear, definite form, such as he can express

in words. It is surprising how vague we sometimes find our ideas to be when we try to express them in speech or in writing. Some one has said that the real value of an argument is not to convince our opponent, but to find out what we ourselves really think about the subject under discussion. Oral answers have the same crystallizing effect on the pupil's knowledge, if he has any, or reveal the absence of knowledge where it was supposed to exist.

It is in this connection that the value of "answering in a complete phrase or sentence" really comes in. Such answering is a means of cultivating clear thinking, and is an index of how far that power is attained; and it has this value if the answer is expressed in the pupil's own form of speech, whether that form be grammatical or not.

4. As to mental activity, the answering of questions suggested by the teacher implies a much higher degree of activity of thought than any form of merely receiving and reproducing a statement, and results in a correspondingly stronger memory. Besides this, it is an exercise in that original thought activity to which memory itself is only a means and instrument.

### Notes on Questioning.

Answering well in oral work is often determined by habit rather than by the amount of information which the class possesses. A class often answers badly, or not at all, because they are unaccustomed to the effort of answering, rather than through ignorance of the subject. In order to correct such habits of mental indolence and apathy, the teacher may, as has already been stated, for a time purposely confine himself to questions which he is absolutely sure every pupil can answer with a reasonable degree of effort. He should put questions whose answers have only to be shaped by the pupils from the most obvious facts, but at the same time he should put them so that mere memory answers will not serve. In this way the class will be encouraged to make the attempt to answer, and by habit they will find the work increasingly easy, and will soon be able to face all such questions as may be reasonably asked.



The teacher should avoid all questions which require only "yes" or "no" for an answer, or which present a simple alternative to the pupils, unless he is ready to follow up such a question by the ever-recurring "Why?" The pupil who is allowed to choose an alternative without giving a reason for it is thereby intellectually demoralized, and is taught, like the gambler, to trust to chance rather than to his own exertions.

To secure plenty of active thinking, the teacher's questions should be brief and many. If his questions are habitually longer than the answers, the teacher may reasonably suspect that he is doing more work than his class.

Questions should rarely be repeated. The habit should be formed of putting the question into its proper form, or at least into a reasonably good and intelligent form, before it is asked. To amend it after asking is a sure means of confusing the pupils in the answer. In addition, it sets them a bad example of loose expression. To repeat it in the same words is equally objectionable. It interrupts the thinking of those who are active, and indulges those who are inattentive.

The question should be no louder than the answer. Both must be distinctly audible to every pupil, and no more. The teacher who shouts to his class actually weakens their power of listening—a power which requires training instead—and wastes his own energy in a bad cause. The teacher who permits inaudible answers to be given is guilty of great injustice to his pupils. They usually take a deep interest in the statements made by their companions, and this interest should be fostered rather than extinguished, as it is sure to be when answers are inaudible.

The habit of inaudible answering really nullifies the chief advantage of class teaching as compared with individual teaching. Each pupil has some answer ready for the question asked, and each should be able to compare this answer with the one accepted. Otherwise, the pupils are left in doubt as to whether their own proposed answers were right or wrong, and no one learns anything except the individual whose answer was accepted. This is so obvious a waste of time that the teacher who accepts inaudible answers frequently gets into the habit of repeating these answers to the class in a louder tone. Here, again, a waste of time occurs. Besides, the sense of responsibility and the feeling of confidence

are weakened in the pupil, who thus acquires the habit of answering by deputy. But the teacher does not usually repeat the *wrong* answers offered; this would be too obvious a waste of time and energy. As a result, when an answer is rejected the bulk of the pupils do not know what that answer was, and the next boy may offer precisely the same incorrect answer. Pupils also become less careful about having their answers complete and accurate, as they feel comparatively safe from the criticism of their companions. The whole benefit of mutual instruction is lost, and along with it the ideal of teaching by question and answer—namely, that the pupils do the thinking and the discovering of new truths under the guidance and suggestion of the teacher's questions. From whatever side it is viewed, whether that of instruction or of training or of mere class discipline, this habit is one of the most objectionable which can be allowed to develop in a school.

A defective answer should never be merely ignored or rejected. The error which has been expressed by one pupil is probably present in the minds of others in some similar form. Hence the necessity for dealing with it, however rapidly, and showing where the mistake has been made. This may be done by a second question to the same pupil, or in some other form, but always in such a way as not to break the main line of the lesson. If treated thus, the errors often become really more instructive than the correct answers, for they serve as beacons to warn others off dangerous points in the course of their thinking.

### Attention.

It is unnecessary here to examine psychologically the nature of attention; and this is so far fortunate, as its real nature is one of the many points regarding which "doctors differ." But the general meaning of the term is well enough understood by every teacher.

Two kinds of attention are usually recognized—involuntary or spontaneous attention, and voluntary or sustained attention. Involuntary attention is that which is aroused by the occurrence of anything which in itself "attracts our attention," as we usually say. This is the earliest form of attention, and in very young children it is the only form.

Voluntary or sustained attention is in many ways the reverse of this. It depends on our power of voluntarily turning away



our attention from occurrences which would naturally attract our notice, and keeping our mind's eye fixed on the subject we have in hand. This power is only to be developed by training and habit. It is thus, in the first instance, an end in education to be distinctly kept in view by the teacher, and becomes, in the second place, the most powerful means for advancing the education of the pupil.

The power of abstraction, or turning away from what would distract, grows by habit. Indeed it may become too strong, and we may lose the power of keeping ourselves sufficiently alive to what is going on around us, by our concentration on the special subject of our thoughts. The teacher may, for example, form the habit of thinking so exclusively of his lesson that he does not notice the state of his class, and so he may be oblivious of the fact that they are not following him so closely as they ought. But in children the danger is all the other way. They are too prone to distraction of attention, and too much disinclined to concentration on the work before them.

Attention must at first be bribed; it cannot be forced. The teacher must make the lesson more interesting than anything else, if he wishes the class to attend to it in preference to anything else. And he must remember that, even by the best means of sustaining interest at his command, it is impossible to maintain attention to one subject for more than a very few minutes at a time.

He may indeed by the exercise of authority prevent the class from attending to anything outside their work. But at the same time the intensity of their mental activity is diminished. Attention must be restricted to a narrow field if it is to be intense; but it may be so restricted, and yet decrease in its intensity. The interest in the lesson is gone, and the children are not allowed to develop interest in anything else, and the result is that their mind falls half asleep. All this may happen, and yet the order remain perfect. The pupils are not doing anything or thinking consciously of anything outside the lesson; so far as any practical result is concerned, we may say they are not thinking at all. They listen, apparently, with all due decorum, as one does to a very uninteresting or commonplace discourse, but in a listless, somnolent state.

The mind as well as the body becomes cramped and weary if kept too long in one attitude. This mental weariness is apt to show itself in physical restlessness. So much the better if

it does, for this restlessness is valuable as an index to the mental state. If it is merely repressed, without the cause of it being removed, the disease is not cured but only "driven inwards," so to speak. The teacher must therefore regard restlessness in a class as **not a disease but a symptom**. The proper cure is to awaken fresh interest, either by a change of occupation, by a short period of mental relaxation, or by some change in the manner of dealing with the subject of instruction for the time.

In older pupils the power of sustained attention is stronger. They are susceptible to the influence of more remote interests than pictures, stories, and physical exercises. They are influenced by such interests as the hope of standing well in an examination, or the intellectual pleasure of being able to solve problems and conquer difficulties for themselves. But such remote or abstract interests count for little with a young class. It is on this account that the work of a teacher of infants is in many ways more exacting and difficult to perform than that of a teacher of older children. The infant teacher requires to be much more full and ready of resource, and to have a more thorough understanding of child-nature.

But long before these remoter interests can be made operative, it is necessary to cultivate gradually the power of concentrating attention on subjects which are not in every part attractive. The stimulus on which the teacher must rely is part of the wide stimulus of duty—the **immediate duty being that of obedience to the teacher's wishes and commands**. This stimulus must at first be carefully masked, or at least withheld from prominence. The teacher has to take care that his orders are such as the children naturally take pleasure in obeying, and he thus cultivates the habit of obedience. The orders should be in the main after the pattern of "*Do this*," rather than "*Thou shalt not*." So the habit is gradually formed of keeping to the prescribed work; first, because it is pleasant work, and afterwards because it is the work prescribed.

The mere desire to please the teacher by obeying him is in itself a natural and strong stimulus to attention. Unless the teacher, by some



error in manner or in judgment, leads his pupils to regard obedience as not pleasant, this will remain one of the most powerful aids to his work all through their school life. It is only *some* teachers that children take a pleasure in teasing or disobeying. If any teacher's pupils enjoy teasing him better than pleasing him, he ought to examine himself very carefully as to the reason why. We have all known teachers whose expressed approval made amends for hard application to some dry piece of work. Some of us have known others whose approval, or even disapproval, counted for very little indeed, possibly because the former was so very rare and the latter so very common. If the same pupils take pleasure in obeying one teacher, and in disobeying another as far as they dare, we are forced to conclude that the reason for this difference is in the teachers themselves.

### Class Discipline.

This raises the whole question of the discipline and management of a class. Class discipline means the art of **maintaining diligence, and attention to work.** To regard it as the power of keeping order is by far too narrow a view. **Diligence has disappeared long before disorder becomes apparent.** Disorder is only the outward sign that attention to work has already vanished. By the time that a few pupils have become restless or noisy, the great majority have become languid in their attention, and few or none are doing their very best.

The teacher must regard the pupil's eye as the "pressure gauge," which indicates the intensity of the mental effort he is putting forth, and of the interest he is taking in the work. And the teacher must therefore regard his own eye as his best means of measuring, and indirectly of maintaining, the attention of his class.

That is, of course, in addition to all that has already been said about making the subject clear and interesting, and not prolonging the lesson beyond due limits. If these points are not attended to, not even the kind of eye so graphically described by Samuel Weller the younger would avail to maintain class discipline. The teacher may see that attention is relaxing, but he will be powerless to prevent it.

It is therefore essential that the teacher should have his subject so thoroughly well prepared that he is able to give some thought to his class at the same time that his lesson is being developed. If any pupil's face shows that he is thinking

or dreaming of something other than the lesson, or is not really, thinking at all, the teacher must be sufficiently wide awake to observe it. A look, a movement of the hand, a momentary pause, or a question addressed to that pupil, will serve to recall his thoughts without interrupting the lesson or distracting the attention of the others. If a word of reproof becomes necessary, the evil is done. The chain of thought is interrupted in the class, and not only is time wasted, but this interruption increases the probability of wandering thoughts among the other pupils when the lesson is resumed. This again is likely to develop a greater or less degree of irritability in the teacher, and so his power of clear exposition and skilful questioning is diminished. He has accordingly to record against himself a failure in the art of teaching and managing his class.

Many, many failures of this kind every young teacher has to face at first, and he must not be discouraged but warned by them. But the chief point to be noted is that he must not be led by their frequency to forget that they are failures. He must regard them as something to be eradicated, not tolerated. He must also regard them as not due to the inherent depravity of his class, but to his own want of skill and experience. Above all, he must beware of sinking to the level of the teacher who says "Hush!" every few minutes to repress the restlessness of the class when it becomes too prominent. That "hush," being interpreted, means, "I know you are not attending; but just sit still, and I shall be content. I must get over this lesson whether you learn any of it or not; please don't interrupt me." It means that the teacher has given up aiming at real attention, and will be content with its mere counterfeit—absence of noise. The life-work of such a teacher will be dreary enough and hard enough. To make up for want of intensity in the mental impressions of his pupils, he will have to resort to endless repetitions in order to get the work imprinted in some way on their memory. He will meet with many an idle and stupid pupil too; indeed it sometimes seems as if such teachers had a monopoly of them.

In teaching large classes it is always difficult, and often impossible, to keep the attention thoroughly aroused, and by mere watchfulness to prevent its flagging. This is, of course, one of the many points in which the best teaching is hampered by the excessive size of the class. Even the teacher who is a perfect disciplinarian, and whose mere presence is a sure preventive of disorder, will still fail to get the same intensity of



individual work from a large class that he can get from a class of reasonable numbers. The teacher of such a class must accordingly resort more frequently to the various artificial means of arousing attention, such as frequent use of the black-board even when not required for the sake of clearness, simultaneous repetition of an answer or of a statement by the teacher, and the like. This makes the work of a large class more of a strain on the teacher, and also slower and less effective even under the very best management. With the young teacher especially the results will be much lowered; he has to think so much less of his subject and so much more of his class. But he must never attempt to "go over" the lesson while ignoring the class. Whatever work is done must be thoroughly done—done, that is, with the full energy of the pupils as well as the teacher. For unless the pupils are actively attentive, they are not learning; and if they are not learning, the teacher is not teaching, however much effort he may be putting forth.

## THE TEACHER.

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### Manner and Manners.

THE success of a teacher as an educator depends more on what he is than on what he knows. It is quite possible for him to be an able scholar, a skilful instructor, and a strict disciplinarian, and yet to miss the highest opportunities of moulding the character of his pupils. This remark applies to their intellectual as well as their moral habits. While the same information may be imparted and the same dexterity in working developed by two teachers of dissimilar personality, the habits of thought as well as the habits of action formed in the class will largely depend on the example set by the individual teacher. It thus becomes highly important for the young teacher to give heed to his own conduct and habits as well as to those of his class.

Much depends on the teacher's manner in dealing with children, and consequently he must be careful of his manners as well. If he wishes to be treated with respect and politeness he must first set the example. This is too much overlooked in daily practice. The young teacher should never treat his class as if he regarded them as being on a lower social level than himself. The little courtesies of daily life, the words "please" and "thank you," and the like, must be attended to by the teacher no less than by the pupils. Ignorance may excuse their omission by a pupil, but the teacher who neglects them is without excuse. The teacher should avoid falling into a style of address in the schoolroom which would be improper or absurd if applied to the children out of doors or at home. The official rela-



tion of teacher and pupil should never be allowed to eclipse the fact that they are simply men or boys of a slight difference in age. Pupils are always to be regarded as human beings at least, and not as certain units without personality, mere "numbers" in a certain class.

**A request is always preferable to an order.** It is more likely to secure co-operation; and it is this, and not mere obedience, that is of the essence of school work.

The young teacher must be specially on his guard against anything like a bullying or offensive style of speech. It is entirely unnecessary, for one thing, seeing that his position as teacher gives the force of law to his requests. It is besides cowardly, since the children are obviously unable to give the retort which bullying should always receive. No expression should be used by the teacher which he would shrink from using in the presence of his pupils' parents. Bullying is also one of the surest means of estranging his pupils, and giving them a natural dislike for him, and consequently for their work.

**Pupils should never be taunted with their stupidity or ignorance.** It is the teacher's business to make himself understood, and he must take a large share of the blame if his pupils fail to understand him. His skill is displayed in making the work intelligible to the class he has before him; and if he fails in this, the failure is neither excused nor atoned for by saying that they *should* have understood him.

**Sarcasm or ridicule must be carefully avoided** even in the presence of strong temptation, and of a talent for such a kind of remark. Sarcasm is only permissible when the other party has the right of retort, and is therefore entirely out of place in the schoolroom. Even if the class as a whole should enjoy a sarcastic remark, the injury to the feelings of the pupil referred to, and his natural sense of injustice under an unfair attack, stamp it as entirely out of place in school work.

**The spirit of obedience to law should be fostered** by making the pupils feel that the school rules are not the outcome merely of the teacher's will, but are necessary for the best conditions of work. Herein lies the whole difference between government and tyranny. The teacher must indeed administer the law; but the law itself is something more than the teacher's will or

caprice, and while acting as administrator of the law, he must avoid giving the impression that he is himself above the law.

Even in regard to the actual work prescribed, the teacher must never ask his class to do what he will not take the trouble to do himself. He must not, for example, require every pupil to have a book, while he himself has to borrow one from somebody. He must never ask his pupils to commit some piece of work to memory, and then open his own book while hearing it repeated; he should show the example of a perfect memory himself. He must never ask a pupil to point out some town on the map, and then be at the necessity of looking for the name before he can do so himself. It is plainly unfair to ask his pupils to remember what he does not seem able to remember himself, or what he does not think it worth his while to learn.

In matters such as truthfulness, punctuality, industry, and even due neatness of person and of dress, it may not be amiss to remind the young teacher that there is not one law for the child and another for himself. If the presence of the headmaster in the room stimulates the young teacher to extra diligence in his work, the class will not be slow to note the fact and draw their own conclusions from it, and many of them will be quite ready to imitate any such weakness of character.

### Sympathy.

The best means of ensuring proper treatment of his pupils, and thus securing their best endeavours in their work, is for the teacher to cultivate sympathy with them. Cheerfulness on the part of the teacher will tend to develop cheerfulness in the class. When a teacher looks as if his work were unpleasant, and annoyed him, the class will develop the same characteristic, and act in a corresponding way.

It will always repay a teacher to know as much of the disposition and tastes of his pupils as he can, and to let his pupils know him not merely as their teacher but also as a friend who takes an interest in them individually. When teacher and pupil are thrown together outside the school precincts, it is sometimes hard to say which is the more embarrassed. They rarely seem to enjoy each other's society. But the better they know each other as individuals the better they will work together in school. Large classes, again, make such knowledge difficult, if



not impossible, just as they render difficult or impossible all that is best in education. Still it is worth while for a teacher to aim at such relations with his children that an hour spent with them anywhere outside school should not be an hour of complete misery. If he can find nothing to say to a pupil when he meets him outside school, all that he says to him inside school must be artificial and unnatural, and will at the best tend to mere instruction rather than education. And if he finds that he has no talent and no desire for making young people feel at home with him, there is some reason for him to suspect that he has drifted into an occupation for which he is unsuited, and in which he will never achieve the highest kind of success.

Tact, that indefinable instinct which guides a teacher in his dealings with his pupils, depends chiefly on sympathy. It is not mere skill, though skill and experience develop and perfect it. And even the intellectual results of school work depend so largely on the possession of tact that the teacher will find that it pays, even in the lower sense of the word, to cultivate sympathy with child-nature.

The modern tendency in school work may be said to be a tendency to exalt the intellectual, even at the expense of neglecting the moral, in education. There is accordingly a danger of the teacher laying more stress on the acquirement of skill in teaching rather than the acquirement of the character of a teacher. The one is so much more easily measured than the other, that there is a danger of its being over-valued. It is well, therefore, that in the multiplicity of his studies the young teacher should occasionally remember that the teacher is greater than the subjects, and that what he is counts for more than what he knows.





## APPENDIX.

### A SELECTION OF QUESTIONS ON SCHOOL MANAGEMENT SET AT RECENT GOVERNMENT EXAMINATIONS IN ENGLAND AND SCOTLAND.

#### PUPIL-TEACHER EXAMINATIONS.

##### END OF SECOND YEAR.

1. What objections may be urged against the teaching of reading on the principle of imitation?
2. State how errors in writing may be best corrected so as to benefit the whole class.
3. What are the chief elements in expressive reading, and how would you secure them?
4. State what use you would make of a blackboard in teaching writing to a class.
5. When should mistakes in reading be corrected—at the time they are made, or after the pupil has finished? Give reasons for your practice.
6. What evils in holding the pen are caused by the use of slate-pencil, and how would you prevent them?
7. How would you conduct a lesson in mental arithmetic so as to ensure that all the pupils were taking a real share of the work?
8. In beginning and finishing a writing lesson, how would you proceed in order that the distribution and collection of pens, copy-books, etc., should occupy the least possible amount of time?
9. Classify, with reasons, the letters in the alphabet, in the order in which you would first present them to children in teaching writing.
10. What methods would you take to give a young child the power of adding by steps and not by units?
11. State shortly the chief qualities to be cultivated in the reading of a Second or Third Standard, and some of the methods you would adopt to secure these.
12. In teaching writing, should the letters be taken in alphabetical order? If not, on what principle would you classify them?
13. Would you make the children read in order in a class, or select one here and there? Give your reasons. What would guide you in deciding the amount to be read by each child?

14. How would you utilize the blackboard in giving a writing lesson?
15. What are the chief causes of inaccurate and monotonous reading? How would you try to overcome these faults?
16. Give a variety of mental arithmetic questions suitable for a Second Standard. In what ways do such exercises help the ready and accurate slate arithmetic of such a class?
17. Explain the methods you would take to secure modulation of voice in reading.
18. Give a variety of mental arithmetic questions suited to a First Standard.
19. Describe and comment on the various methods commonly employed for teaching young children the first steps of reading.
20. Show how you would give a first lesson in vulgar fractions.
21. What precautions ought to be observed in conducting a dictation lesson?
22. Give eight examples of useful mental exercises on number for young children, the highest number not to exceed 30.
23. Describe your method of teaching writing to a class of beginners.
24. At the close of the reading lesson how would you test the intelligence of Standard II.?
25. Explain how you would teach subtraction to a First Standard.
26. What posture of body and mode of holding pen should be aimed at to secure good writing?
27. What are the chief elements in good reading, and how would you secure them?
28. Give an outline of an object lesson on "silk" or "coal" to a young class. What purposes should chiefly be kept in view in such a lesson?
29. Enumerate the main points of good reading. What course would you follow to secure (a) distinct articulation, (b) intelligent expression?
30. Describe how you would conduct a dictation lesson.
31. What direction would you give to a child who is learning to write regarding his proper position at the desk? Why is it important to attend to this?
32. What points would you keep in view in giving mental arithmetic lessons to a Second Standard? Write an outline of such a lesson.
33. Write as a large-hand copy the words "geometrical drawing," and point out which letters are likely to present special difficulties to a young scholar, and what rules should be observed in forming such letters.
34. Work out fully, as on the blackboard, before a class, the following sum, so as to show the separate value of each figure in the answer, and also of each of the remainders—Divide £7387, 16s. 4½d. by 17.
35. Name eight words in the spelling of which young children often make mistakes, and explain by what sort of exercises such mistakes may be corrected or avoided.
36. In giving lessons on counting to very young children, say what apparatus you would find useful, and how you could make such lessons effective if you had no apparatus.
37. What is meant by distinct articulation in reading? Name any words



which present special difficulty to learners, and mention any form of exercise that is most useful in correcting faulty articulation.

38. Show how you would group the capital letters in the English alphabet for teaching.

39. Show what kind of ruling in the slates and copy-books of the younger children is best suited to teach the proper forms and proportions of letters. Give illustrations.

40. Explain the use which a teacher should make of simultaneous and of pattern reading, and say what objections, if any, there are to an excessive use of either method.

41. Give as many forms of mental exercise as you can contrive on the number "twenty-four."

42. Explain what is the proper use of a ball-frame or counting-frame in teaching arithmetic. Suppose you had no such apparatus, explain how you might teach counting by any of the objects in the schoolroom.

43. Write six capital letters in such a way as to show the proper forms and proportions of their parts, and say how you would give a lesson on them.

44. In teaching the elements of reading to young children, say whether it is better to begin with little words and afterwards call attention to the letters, or to begin with the alphabet and afterwards make up simple words. Give your reasons.

45. Describe the best way of ruling slates so as to help young scholars to understand the forms and proportions of letters. Give an example.

46. What is the use of "pattern reading" in teaching a class to read? Mention any common faults which a good teacher should avoid in giving such a lesson.

47. Describe some exercises in mental arithmetic suited to children in the First Standard, and give examples.

48. Make some mental exercises on *money*, suited for the First and Second Standards, and let them be as varied in form as possible.

49. It is said that some children know their reading-books almost by heart, and that when examined they are only reciting and not reading. How could you detect this fault, and by what means could you guard against it?

50. Arrange in groups the capital letters, putting together those which are similarly formed. Show in what order you would teach them, beginning with the easiest group and proceeding to the most difficult.

51. Say exactly what are the requirements of the Code respecting arithmetic in Standards I., II., III., and IV.; or what lessons in number can be given to the first class (in an infant school without a First Standard).

52. Explain what is the best use to make of a box of movable letters in an infant class; or give some exercises in mental arithmetic suitable for Standard II. (in a school for older scholars).

53. In using pattern reading, so as to give the correct tone and expression, say whether you would employ it at the beginning or the end of your reading lesson, and give your reasons.

## END OF THIRD YEAR.

1. What is meant by the "comparative method" in teaching geography? How would you use it?
2. Give a definition of a noun, and show how it applies to all classes of nouns.
3. How would you prevent "fingering" in teaching to count?
4. How would you teach the difference between primary and secondary colours to a gallery, and what simpler names would you give them?
5. How would you use grammar from the first, so as to teach composition through it?
6. Say for what purpose you would use the blackboard in teaching geography, with reasons.
7. In a lesson on an object shown to a class, what facts should be elicited by observation, and how would you correct errors made regarding them?
8. What concrete objects should be used, and which avoided, in early lessons on number?
9. How would you show to a class the need of a first meridian being *fixed* on in longitude?
10. What should guide you in selecting the names of places (physical features and towns) to be learned by your pupils in geography?
11. State precisely, with reasons, for what purposes you would use simultaneous answering in a gallery.
12. When would you begin the teaching of composition? Give specimens of the exercises you would use at first.
13. What is the use of pupils pointing out places on the map? How can this exercise be best managed with a large class?
14. Name the best methods of utilizing a map in teaching geography.
15. Explain the means by which you would secure answering from the mass of the children in a gallery.
16. What materials would you provide and what materials are always at hand in the school itself, for illustrating a lesson on (a) form, (b) colour?
17. What would you give as the definition of a verb? Show by example the correctness of your definition.
18. Select any three words from the following passage to illustrate, by means of short sentences, the use of the same words as different parts of speech:—"If the water remains smooth much longer, we shall round that point of rock before the sun goes down."
19. Draw a rough sketch such as you would make on the blackboard to illustrate to a junior standard the various geographical terms connected with rivers and mountains.
20. State fully how you would utilize the blackboard in teaching geography.
21. Write notes of a lesson on (a) trees, or (b) ways of travelling.
22. Explain how you would teach the four chief points of the compass in nature, and show how these are transferred to the map.
23. How would you teach gender in English?



24. Write notes of a lesson for infants on an "ostrich," being specially particular as to method.
25. What methods would you employ in teaching composition?
26. Write notes of a lesson on any useful plant.
27. Show how you would teach writing to beginners. Refer in your answer to the *order* in which the letters should be taught.
28. State what means you would adopt to train your scholars in habits of punctuality and of good manners and language.
29. Write an outline of such a lesson as you would give to a Fourth Standard on the rivers of England.
30. What are the more common faults in composition exercises? How would you remedy them?
31. How would you give a *first lesson* in geography to a class?
32. Write notes of a lesson on one of the following subjects: (a) a railway station, (b) a pig.
33. Draw up notes of a lesson, as for Standard III., on the coast-line of Scotland.
34. In the ordinary work of your class, how would you inculcate habits of neatness, industry, and punctuality?
35. Draw up full notes of a lesson (specifying the age of the class for which it is intended) on one of the following subjects: (a) ocean currents, (b) the verb, (c) yellow (colour lesson for infant class).
36. What methods would you adopt in teaching grammatical analysis to beginners?
37. Show how you would begin to teach the analysis of a complex sentence. Illustrate by an example.
38. State on what principles you would choose subjects for object lessons to an infant class. Write a short list of suitable subjects, and sketch the outline of a lesson on one of them.
39. Write out four simple problems in arithmetic such as would be suitable in the Fourth Standard, for testing the intelligence with which the scholars had learned the rules.
40. What is the meaning of the distinction between physical, political, mathematical, and industrial geography? Say which of these should be first taught, and why.
41. Write out notes of a lesson on one of these subjects: (a) ratio, (b) bees (for infants), (c) English cathedrals.
42. Write notes of a lesson on (a) a court of justice, (b) a farm-house, (c) building a house (for infants).
43. Show, by means of illustration, how you would explain to a class of scholars the reason of one of these processes: (a) finding the common denominator of three or more fractions; (b) reducing miles to half-inches.
44. Draw a map of the school premises, and of the roads or streets adjacent with which you are most familiar; and say what use you could make of such a map in teaching the elements of geography.
45. What are the class-subjects mentioned in the Code? If you had to teach one of them, say how far you would rely on reading books and how far on oral lessons.

46. Write full notes of a lesson on one of these subjects: (a) the Alps, (b) adjective sentences, (c) a candle (for infants).

47. Say what are the best means of rousing and sustaining the attention of a class inclined to be disorderly.

48. Make up half a dozen good testing questions in arithmetic for scholars who are supposed to have been a year in the Fourth Standard, and to be ready for promotion to the Fifth.

49. In teaching grammar say in what order you would take the parts of speech, and give your reasons. Which should be taken first, the *examples* or the *definitions*, and why?

50. Write out complete notes of a lesson on one of the following subjects: (a) the House of Commons, (b) the primary colours (for infants), (c) the uses of the electric telegraph, (d) mountains.

51. Suppose you were criticizing an object lesson given by another teacher, under what heads would you arrange your criticisms, and what tests would you apply in order to judge whether the lesson was successful or not?

52. Draw a map of the surroundings—street, road, church, etc.—of your schoolroom, such as would serve to make the meaning and use of a map intelligible to young children.

53. Write simple notes of a lesson on one of these subjects: (a) a clock, (b) a verb in the passive voice, (c) a desert.

54. Say exactly what are the requirements of the Code under the heads Arithmetic, English, and Geography, for scholars of the Fourth Standard.

55. Describe the sort of apparatus or picture which would be useful in an infant school for teaching counting.

56. Write out full notes of a lesson on one of these subjects: (a) a cotton mill, (b) wheat and its uses, (c) the parts of a sentence (first lesson in analysis), (d) snow and rain.

57. Explain fully, as to a class of beginners, the method of long division, and work out the following question so as to show the meaning and value of each figure in the answer: Divide £23782, 10s. 6d. by 17.

58. Write out in detail a lesson on *Lakes*, showing how they are formed, in what sort of country, and how they look.

59. Give the heads of a lesson on the three principal colours, and say what objects, pictures, or apparatus you would need to make such a lesson interesting and useful.

60. Make notes for a collective lesson on one of these subjects: (a) a river (for Standard II.), (b) the colour blue (for infants), (c) adverbial sentences (a first lesson).

61. Explain how you would make young children familiar with the use of the figures 17 as the notation for seventeen.

62. Explain, as to a class, the meaning of the word "tense" in grammar, and give an outline of a first lesson on the tenses.

63. Draw a plan of some schoolroom with which you are familiar, and give its dimensions and those of the desks and chief articles of furniture. Say of what use such a plan is to young children.



## END OF FOURTH YEAR.

1. At what stage would you teach children the shape of the earth? Give reasons.
2. Say how you would deal with errors made by your pupils so as best to prevent their recurrence.
3. Draw up notes of a first lesson on a fraction. Say at what age it might be given, with reasons.
4. What means would you recommend for the effective correction of errors in spelling? Give reasons.
5. Draw up notes of a first lesson on the shape of the earth. Say what time you would give for it.
6. In teaching the modulator, state shortly, with reasons, the order in which you would take the notes of the scale.
7. Draw up notes of a lesson on the decimal point in arithmetic.
8. Describe some of the means by which the history lesson may be made of real interest to young children.
9. To what children, and for what reasons, would you teach (a) musical drill, and (b) military drill?
10. Draw up short notes of a lesson on abstract nouns.
11. State any advantages of giving children in the junior classes a variety of books for reading practice, and any evils resulting from repeated reading of the same book throughout the year.
12. How would you make it clear to a class beginning decimals that  $\frac{1}{4}$  and  $\frac{25}{100}$  represent the same fraction of a unit?
13. Prepare notes of a lesson on a fraction and its arithmetical expression, as in  $\frac{3}{4}$ .
14. Explain the maxim in teaching, "It is only what a pupil does that educates him."
15. What is meant by correct "phrasing" or grouping of words in reading? How far does an intelligent knowledge of grammar contribute to this?
16. In oral examinations what are the objections to the teacher habitually repeating the answer given by each child?
17. Explain clearly the advantages of drawing out notes of a lesson before teaching it. What points should receive special prominence in such notes?
18. Prepare notes of a lesson for an upper class to show that the part of speech of words in English is determined by function.
19. Mention the best way of grouping the alphabet in teaching writing. Give your reasons.
20. Describe how you would teach direction in geography, and how you would explain it in reference to a map.
21. Write out five or six lines of poetry, and show briefly how you would use them as a lesson in the class-subject of English to a Fourth or higher Standard.
22. Write the heads of a lesson on (a) the countries of Europe, or (b) interest (arithmetic).

23. State clearly how you would give a dictation lesson. How would you deal with errors in spelling?
24. Write notes of a lesson on (a) rain, for an advanced class, or (b) iron, for a Second Standard.
25. Write notes of a lesson, with special attention to method, on "a vulgar fraction."
26. How would you utilize erroneous answers given during a lesson?
27. Explain the methods you would follow and the illustrations you would use in introducing a class to the study of fractions.
28. What points would you insist on in the reading of Sixth Standard scholars? What common faults are to be guarded against in the reading of poetry?
29. Write an outline lesson on (a) the Revolution of 1688, or (b) the Indian Mutiny.
30. Write notes of a lesson on "the valley of the Tweed," or of a "first lesson in fractions," specially explaining the numerator and denominator.
31. Mention the chief difficulties in teaching composition, and the best means of overcoming them.
32. Write notes of a lesson on subordinate sentences.
33. Write notes of a lesson on the predicate of a sentence.
34. Give examples of some arithmetical questions worked mentally, preparatory to a first lesson on addition of fractions.
35. Write notes of a lesson on some article of manufacture.
36. How would you give a first lesson on "carrying" in subtraction?
37. Which of the following words present to young children difficulties in spelling—suit, their, full, bear, tear?
38. What visible illustration can you suggest for explaining the way to find the true remainder when division is performed by breaking up the divisor into factors?
39. Write one line as a specimen of the handwriting which you would endeavour to teach the first class in your school to reproduce in their copy-books. What are the chief faults to be avoided in respect of the slant or slope of the down strokes?
40. Mention half a dozen examples of the way in which careless or indistinct articulation leads to bad spelling. What help would you give to prevent mistakes in words containing the sound variously written as *ie*, *ei*, *ee*, and *e*?
41. Give examples of four of the more difficult joinings which occur in combining letters, and explain how you would, in your writing lessons, teach the children to master these difficulties.
42. Write out full notes of a lesson (matter only) on "a country walk," or "what to notice in shop windows." State the age of the children for whom the lesson is intended.
43. Show that a child may be more readily taught to read correctly if he is first taught to speak correctly, and explain the method in use in your school for teaching the children to speak.
44. Give notes on prefixes common in English words for such a lesson as you would propose for the Seventh Standard.



45. Describe fully your method of giving a lesson to your highest class on the poetry which they are preparing for repetition, so as to make them understand it thoroughly.

46. (a) What is meant by a collective lesson? (b) Where would you place the children to whom you give it? (c) How would you question them upon it so as to discover how much each child had learned from it?

47. In what way would you teach reading so as to ensure (a) emphasis and expression; (b) thorough understanding of the words in the book; (c) retention in the memory of the subject-matter of the lesson?

48. Give notes of a lesson on one of these subjects: (a) a plough, (b) bread, (c) grass.

49. Describe a simple exercise in paper-folding, and say of what use such an exercise is in the education of a little child.

50. Write out a sketch of a lesson on one of these subjects, and state what illustrations you would require to make such a lesson effective: (a) the herring fishery, (b) the manufacture of steel, (c) the parts of a simple sentence, (d) a coal mine, (e) the colours of the rainbow.

51. How can spelling best be learned, orally or by writing, or by any other plan? Say how you would secure the right spelling of the difficult words in a reading lesson without interrupting the reading too much, or making the exercise uninteresting.

52. Classify the letters of the English alphabet according to the difficulty of writing them, and the order in which they should be taught. Describe also the best way you know of ruling slates and copy-books for the younger children.

53. Of three simple manual employments—building, plaiting, and elementary drawing—which do you think most helpful in the education of a child, and why? Explain how you would use and vary the exercise you prefer.

54. If you were giving a lesson on a reign—for example, that of Elizabeth or Charles the First—say what are the most important facts you would refer to, and in what order would you teach them.

55. Explain, with illustrations, as to the scholars of a Fifth or Sixth Standard, the difference between literal and figurative language.

56. Show how you would make the distinction between transitive and intransitive verbs understood by scholars in the Fourth Standard.

57. Why is it useful to require children to form sentences of their own in illustration of your grammar lessons? Give some examples of exercises of this kind, both oral and written, such as might be required from children in the Third Standard.

58. Make out a sketch of a collective lesson on one of these subjects: (a) a farmyard, (b) tides, (c) the season of spring, (d) the whale.

59. The Code requires that mental arithmetic "should not involve large numbers, should deal with concrete as well as abstract quantities, and should be preparatory to the work of the next higher standard." Give ten examples of mental arithmetic questions which fulfil these conditions, and which are suitable for the Fourth Standard.

## TRAINING-COLLEGE EXAMINATIONS.

### ADMISSION EXAMINATION.

1. Write full notes of a lesson on one of the following: (a) the oak-tree (for infants), (b) the Alps, (c) the Revolution of 1688.
2. By what means have you been accustomed, when teaching children to read, to promote individual effort in dealing with new or forgotten words?
3. What are the advantages of training children to answer in sentences instead of single words?
4. If you were given charge of a class of young children supposed to know the simple rules, but accustomed to count on their fingers, how would you proceed to get rid of this bad habit?
5. For what purposes is school drill useful?
6. Show, by giving a short sketch in each case, the different points you would bring into prominence in giving a lesson on Alfred the Great to children in the lowest class and to those in the highest class in school.
7. What preparations have you been taught to use before letting children attempt to work sums in weights and measures?
8. What part of the preparation for each lesson have you been accustomed to get the children of your class, or monitors chosen from them, to do for you? Why is it useful to get all possible work so done?
9. What variety of occupations have you found suitable for children between five and six years old?
10. Write out full notes of a lesson on one of these topics: (a) the seasons; (b) a shilling (for infants); (c) adjectives, adjective phrases, and adjective sentences; (d) the use of laws.
11. Say what sort of pictorial or other visible illustrations you would use in teaching the elements of arithmetic to very young children, and show what use you would make of such illustrations.
12. Give some simple rules showing the best way of conducting a class lesson in writing.
13. Give a summary of the requirements of the code in the subject of geography for the several standards.
14. Show in how many ways you could vary exercises in mental arithmetic suited either (a) for the upper class in an infant school, or (b) for Standard V.
15. Make a list of object lessons suited *either* for an infant class or for older children. Show in which of the subjects you would think one lesson sufficient, and to which you would assign two or more lessons.
16. Describe the best exercises you know in English composition, and the best ways of correcting them.
17. Name the chief points to be kept in view in teaching the art of reading. Name the advantages, if any, of exercises in silent reading in school.
18. Frame three sets of arithmetic questions suited for scholars in the Fourth Standard, so as to test their knowledge of the reasons of rules as well as the power of applying them.



19. Describe the most useful and healthful exercises in drill which you have seen, and say how you would conduct them.

20. State what use you have made of note-books and exercise-books as a pupil teacher, and how such books ought to be kept.

21. Distinguish between *elementary* subjects, *class* subjects, and *specific* subjects. Give a list of them, and show what proportion of time ought to be given in a good school to those groups of subjects respectively.

22. Explain the best way of arranging a class for a reading lesson; and show how far in conducting such a lesson you will make use of (a) simultaneous reading, and (b) pattern reading.

23. Name some of the commonest faults of assistants in teaching spelling. How much of a spelling lesson should be oral, and how much should be written?

24. Take the number thirty, and say how many forms of mental exercises you could devise with that number for a class of children in Standard I., so as to give them some early acquaintance with concrete and fractional as well as simple arithmetic.

25. Describe a good lesson on *colour* for an infant class, and say what illustrations you would get together before giving such a lesson.

26. Make an outline map of the parish or district in which your school is situated; and explain how such a map would be useful in giving an elementary lesson in geography.

27. In teaching history, say what use, if any, you would make of chronological tables. Is it better to learn the date before or after the pupil knows something of an event, and becomes interested in it? Give your reasons.

28. Write out brief notes of a lesson on one of these subjects: (a) silver, (b) a blacksmith's forge (for infants), (c) the four seasons.

29. In using a map show how you would give a true idea of the size of the country and of the distance between important places. What use should be made for this purpose of the lines of latitude and longitude, and of the scale of miles? Say approximately what is the distance from London of York, Exeter, Bedford, Norwich, and Edinburgh.

30. Name any poems or verses which you would choose to be learned by heart either (a) by infants or (b) by scholars in the Sixth Standard; and say what is the use of memory exercises of this kind.

31. What are the best expedients you know of for reviving the attention of a languid or disorderly class?

32. Describe the method you adopt in teaching "singing by note" to a class of beginners.

33. Say what is the use to a pupil teacher of keeping a diary of employments or notes of the lessons he or she gives. If you have been accustomed to preserve such a record, describe it.

34. What sort of decoration is most appropriate in a schoolroom and most likely to make it bright and attractive?

35. What is a criticism lesson? Under the head of discipline what points would you attend to in such a lesson?

36. Write notes of a lesson on one of the following subjects: (a) the commercial importance of the Rhine, Vistula, and Danube; (b) Cardinal Wolsey; (c) interest of money; (d) sugar (infants).

37. In giving a lesson on the Duke of Wellington, show what use you would make of comparison and contrast with any other character in history.
38. What rules have you learned to observe in giving out dictation?
39. After a class has reproduced in writing a short story which you have previously read to them, what is your method of revising the exercises?
40. Give some hints for making oral exercises in arithmetic interesting.
41. Give a short list of the different kinds of books you would expect ordinary boys and girls to be able to read by themselves immediately after quitting the day-school, say at the age of thirteen. Mention some good books which you think are rather too difficult for such children.
42. In preparing a lesson upon a comparison between the present condition of Great Britain and that of France, Germany, or the United States, state what classes of facts you would wish to procure, and in what books you would seek them. Give an example of a sketch which would exhibit your facts in tabular form on the blackboard.
43. In what ways may success in class teaching be promoted by studying the characters of the children?
44. Explain any way you know of making clear to the eye the process called multiplying  $\frac{3}{4}$  by  $\frac{1}{2}$ .
45. After explaining to a class the effect of mountain ranges upon climate, show how you might lead the children to seek further proofs for themselves.
46. What is an object lesson? Show that mere sight is not necessarily knowledge.
47. In giving a lesson on a river, which is the better plan, to speak first of a particular river which the children have seen, or to start with a definition and general description? Give reasons for your opinion.
48. Describe the best method of proceeding in teaching a new song to infants or to older children.
49. Describe and shortly discuss the "look and say" method of teaching reading. What methods would you consider the best preparation for dealing with new words in unprepared passages?
50. What are the uses of "pattern reading" by the teacher? Should this come before or after the pupil's own first attempt to read the passage? Give reasons.
51. What are the essential qualities of a good current hand of writing? Give examples; and illustrate also the points which contribute to legibility in any style of writing.
52. Enumerate and explain briefly the points you would consider of importance in the essay of an advanced pupil. What teaching would you consider necessary (a) before and (b) after the writing of the essay?
53. Give a list of the rules and methods in mental arithmetic suitable for a Second Standard class, and give specimen problems to show how these should be used in calculation.
54. Sketch the course of a first lesson in compound subtraction, with examples; and describe what mental practice you would assume the pupil to have had as a preparation.
55. After children can point out verbs, in what order would you teach the



facts regarding them necessary to full parsing, such as kind, voice, mood, etc.? Give reasons for the order you select.

56. Describe the way in which you would introduce the complex sentence in analysis, with suitable illustrations.

57. What are the uses of map-drawing by the pupils, and at what stage can such exercise be commenced? Distinguish in your answer between maps drawn from a copy and maps drawn from memory.

58. Mention the various ways in which interest can be stimulated in the teaching of history. Illustrate the uses that may be made of local traditions and historical scenes or buildings in this connection.

59. What is meant by kindergarten work? Describe some of the more important exercises, and state clearly the aim of each.

60. Mention and illustrate the most effective methods you know of securing, maintaining, and testing the attention of all the pupils during an oral lesson. What are the most common causes of inattention?

61. Write out notes of a lesson on one of the following subjects: (a) mountains, treated either as a first lesson, or as a lesson to an advanced class; (b) some common food plant; (c) tidiness in school. (At the beginning of your notes state clearly (a) the age or standard of the children for whom it is designed, (b) the apparatus required, and (c) the time necessary for teaching.)

62. Mention and illustrate the more common faults you have observed in the answers when questioning on the meaning of a reading lesson, and say how the various classes of faults should be dealt with. What methods would you adopt to secure work from dull pupils who rarely answer?

63. What use should be made of the globe in teaching geography? In what standards is its use most necessary? Give reasons.

64. What kind of lessons preparatory to the study of history should be given to a First or Second Standard class? What objects would you aim at in their selection? Give a specimen list of lessons.

65. What are the advantages of home lessons, and why are they often objected to? In what subjects would you give home lessons to a Fourth Standard, and how long would you expect the children to be occupied with them each evening?

66. Teachers, especially young teachers, often speak in a very loud tone of voice when teaching. Why is this? What are the evils of such a habit (a) as regards the teacher, and (b) as regards the pupils?

67. Write out notes of a lesson on one of the following subjects: (a) the life of some great writer, (b) school friendships, (c) Greenland, (d) making a button-hole (first lesson). (At the beginning of your notes state clearly (a) the class or age of the children for whom it is suited, (b) the purpose of the lesson, and (c) the time necessary for its teaching.)

68. Would you prefer reading books or large reading sheets for those beginning to read? Give reasons, and describe fully the way in which both should be used in the younger infant classes. What is the largest number you would place in one reading class at this stage?

69. Mention some advantages which would result from the use of newspapers or magazine articles to supplement the class reading-book in

advanced classes. For what other lessons might these sources afford materials or illustrations? Give examples.

70. Mention the chief difficulties of children in beginning to hold the pen, and say what plans may be taken to avoid or overcome them. Describe how the pen should be held, and mention what you consider the chief reasons for its being held wrong in schools.

71. In what order would you teach the capital letters to beginners in writing? Justify the order you select by an analysis of the various elements composing the different classes of capitals.

72. Sketch the steps by which you would introduce decimals to a class which already knows vulgar fractions, giving examples. Whether would you recommend an advanced class to use vulgar or decimal fractions in solving problems where either method is permissible? Give reasons.

73. Describe the various stages whereby you would prepare for and commence the teaching of simple division. At what stage in the pupils' progress would you first use mental exercises in division?

74. The class-subject "English" includes for Standard II. "formation of easy sentences." Describe, with examples, the exercises you would give under this head, and say what benefits you might expect to result from such exercises.

75. Write full notes of a lesson on one of these subjects: (a) forests and forest trees, (b) prepositions and conjunctions, (c) the primary colours (for infants).

76. What are the requirements of the Code in the arithmetic of the Second and Third Standards, and what sort of oral or unwritten exercises ought to be given in these classes?

77. If you were at liberty to choose between "English" and "geography" as a class-subject, which would you prefer, and why would you prefer it?

78. Which of the manual employments of an infant school is most useful as a help in the teaching of writing? Explain and illustrate your answer.

79. Suppose you wished to explain to a higher class the difference between literal and figurative language, what illustrations would you give?

80. What are the advantages of teaching large hand before small or running hand, and how far is it desirable to continue large-hand practice in the upper classes? Give a model copy in each hand.

81. Some school subjects are taught because they are useful as information or in practical life, and others because they furnish good mental exercise. Name some departments of school work in each of these classes, and say which of them you think of most importance.

82. When and how is learning by heart most useful in a school? Give reasons for and against committing to memory—(a) definitions of words, (b) rules of grammar, (c) dates, (d) selections of poetry, and (e) arithmetical tables.

83. Explain, as to a class of scholars, the rule for "cancelling" in either fractions or proportion, and give some examples.

84. What is meant by style and expression in reading, and how can they best be taught?



## CERTIFICATE EXAMINATIONS.

1. What do you mean by method? Show in what way method must be varied.
2. Write notes of a lesson on one of the following: (a) a mouse (infants), (b) addition of vulgar fractions, (c) the Chino-Japanese war, (d) good manners.
3. What ground is there, if any, for the distinction made by the Code between "elementary," "class," and "specific" subjects? Can you suggest any other practical classification of subjects usually included in a complete school curriculum?
4. What is meant by apparatus in teaching? In dealing with what subjects and with what cautions should apparatus be used?
5. In teaching English, would you propose to begin with the parts of speech or with complete simple sentences? Give reasons for your choice; and show how you would proceed with the method you prefer.
6. Show by what devices and within what limits kindergarten work can be developed in the schools for older children, and discuss the value of such development.
7. What is meant by attention? How can it be cultivated in children?
8. Write notes of a lesson for a senior standard on one of the following subjects: (a) means of locomotion, (b) division of labour, (c) uses of colonies; or for infants on one of the following: (a) an apple, (b) bread, (c) the bee.
9. What is meant by the faculty of observation? How would you endeavour to cultivate it (a) in a town school, (b) in a rural school?
10. "In teaching, we should pass from the known to the unknown." Discuss this saying, and show how you would apply it in giving a lesson on "kindness to animals."
11. Give directions to a young pupil teacher how to give and correct a dictation exercise.
12. Describe some of the kindergarten exercises with which you are most familiar, and explain the objects in view in teaching them.
13. Describe what means you would take to teach geography to a Sixth Standard class.
14. Name the manual employments most interesting to little children, and explain how an exercise in one of them should be conducted.
15. What is meant by decimal coinage? How would you endeavour to give correct notions of it to a Fifth Standard class?
16. In teaching an infant class how far would you rely on the principle of rewards and punishments? What could be the nature of these?
17. What are the difficulties you have met with in teaching composition? How have you endeavoured to overcome them?
18. What is meant by eliciting? Give some simple examples of how you would use this process in giving elementary notions of addition and subtraction.
19. Write full notes of a lesson on one of the following: (a) different means of locomotion, (b) birds, (c) the manufacture of paper or pens, (d) the

telegraph. (At the end of your notes say for what standard the lesson is intended, and the time it is to occupy.)

20. What points would you keep chiefly in view in making up a scheme of object lessons for an infant class? Give a list of six objects for such lessons. Give reasons for your selection, and say in each case what particular point you have in view.

21. What difficulties are most frequently met with in teaching composition? How would you endeavour to overcome them?

22. Say what you consider the qualities of good reading, and state what methods you would adopt to secure these in a Sixth Standard class.

23. Describe briefly any two methods of teaching reading to a class of infants, one of the methods being that which you yourself favour. Give reasons for your preference.

24. Explain, as to a class, the terms principal, interest, rate per cent. per annum; and from your own explanations deduce the rule for finding the interest on a given sum of money for one year at a given rate per cent.

25. To what extent would you use the ball frame in teaching arithmetic? Mention any abuses which have to be guarded against. At what stage would you cease using it, and by what would you replace it? Give full reasons for your answer.

26. Discuss the comparative value of memory of words and memory of things. In what way may they be cultivated? How would you utilize them in a geography lesson for beginners?

27. Specify the chief causes of inattention, and say how you would try to obviate them (a) in the case of infants, and (b) in the case of older children.

28. What do you mean by good discipline? How would you endeavour to secure it?

29. Describe the use you would think it right to make of poetry and of pictures in teaching, and show in what departments of educational work they can be made most effective.

30. What are the main points to be aimed at in any good current hand? What plan would you take to impart these characteristics to the penmanship of your pupils?

31. State the advantages and disadvantages of children being taught to write on slates before copies are used. How can those disadvantages be minimized?

32. Write full notes of a lesson on one of the following topics, showing (a) for what class of scholars it is intended, (b) what visible illustrations would be required, and (c) what is the educational object aimed at: (a) reduction to a common denominator, (b) the manufacture of either iron or porcelain, (c) colour (for infants).

33. Frame three sets of questions in arithmetic suited for the examination of scholars in the Third, Fourth, and Fifth Standards respectively, so as to test their knowledge of the reasons for rules as well as their application to practice.

34. What are the tests of good reading? Discuss the importance and usefulness of (a) pattern reading, (b) silent reading, and (c) simultaneous reading.



35. Give what you would consider a suitable time-table for the studies and employments of a pupil teacher in his or her third year.

36. Grammar has been sometimes defined as the "art of speaking and writing the English language with propriety." How far does this definition appear to you to be true or adequate? By what expedients other than the teaching of technical grammar is it possible to enrich a pupil's store of words, and to encourage precision in the use of them?

37. In criticizing a lesson given by a teacher, what are the special points to which attention should be directed? Give some rules as to pupil teachers to help them in judging of merits and defects, and in forming a just estimate of the success of a lesson.

38. At what point in your teaching of arithmetic would you introduce "rules" and require them to be learned? Give a sketch of a model lesson on "division by factors," showing when and how you would teach the rule for that operation.

39. It is said to be a good principle in teaching that "we should proceed from the known to the unknown." Discuss this dictum, and show how it ought to regulate, for example, the mode of commencing a lesson on some unfamiliar object.

40. The Code directs that the earliest lessons in history for young children should be anecdotal and biographical. Give reasons for this recommendation, and mention a few leading incidents in English history which you think might be usefully narrated to learners before their regular chronological study of English history begins.

41. Give notes of a lesson on one of the following: (a) how towns begin to grow, (b) the sky, (c) a daily newspaper, (d) the human hand. (At the head of your notes state clearly (a) the standard or average age of the children for whom it is meant, (b) the precise purpose of it, (c) the time it is to occupy.)

42. With what aims in view would you practise your pupils in reading aloud matter not contained in their regular reading-books? Specify as for each class or grade the sort of "previously unseen" reading matter you would choose. Show in detail how you would conduct a lesson of this kind.

43. What do you understand "intelligent explanation of the passage read" to involve? Explain carefully with illustrations the methods you would adopt for fitting your pupils to meet this requirement.

44. Write instructions as for a pupil teacher in his conduct of a writing class on (a) the holding of the pen (or pencil), (b) joinings, (c) slope; and point out to him under each head (a) the reasons for the right method, (b) the errors he is likely to find prevalent in his class, and the special means to be adopted for correcting each of them.

45. Discuss the respective values of (a) oral spellings and (b) transcription as means for the teaching of orthography. Describe any plans you would adopt with a view to making spelling lessons interesting to the class.

46. Sketch out, with graduated examples, the line of teaching you would adopt in order to make young children grasp the rationale of carrying in addition. Show how in mental exercises addition and subtraction can be taught together.

47. (a) By what means would you make your pupils (Standard IV.) grasp the meaning of reduction in both its forms? (b) "Reduce 260,718 square feet to acres." (Work the question in full, appending such notes upon points of special difficulty as would be needed by your class.)

48. What are the chief elements of good recitation? What considerations should guide you in choosing pieces for recitation by your pupils? What preparatory work upon the selected pieces should be gone through with the class before the actual learning by heart begins?

49. Selecting any class you please above the First Standard as your class for a year's work in geography, give an outline sketch of your course of lessons in this subject for the first three months. Describe carefully any methods you would adopt for making your teaching of geography practical and interesting.

50. At what stage of a child's school life would you begin to teach him drawing? Give your reasons. Give (a) a brief statement of the exact aims you would keep in view, and (b) an outline of the specific course you would adopt for a child's first year's instruction in drawing.

51. In regard to either "elementary science" or "manual instruction," state (a) the arguments for the introduction of the subject into the curriculum of school work; (b) the equipment in the way of apparatus, illustrations, etc., needed; (c) the errors in method in teaching it that must be specially guarded against.

52. What are the faults most likely to occur in the reading of infants? In regard to each of these faults, state what steps you would take to avoid or to correct it. Show in what ways you could make recitation by young children a help towards their learning to read well.

53. Within what limits, and for what special purposes, may the "simultaneous" method be advantageously employed in reading? State clearly the evils that attach to the practice of simultaneous *answering* under oral class examination.

54. State succinctly the causes of the peculiar difficulty of English orthography. What general principles should guide you in the teaching of spelling? Explain carefully how you would use writing as an aid to this.

55. Show how examination on the reading lesson may be utilized for the teaching of composition. Should the examination on the meaning be taken with books open or shut? Give your reasons. Discuss the advantages or disadvantages of providing printed "columns of meanings."

56. Give a careful outline of the course of method you would adopt in the teaching of simple subtraction. Explain clearly how you would treat "borrowing and carrying."

57. What are the special aims you would keep in view in preparing exercises in mental arithmetic for a Fifth Standard? Illustrate your answer by six suitable exercises, with comments on each.

58. What is an "object lesson"? State clearly the advantages likely to result from a systematic course of such lessons. Write down what would appear on the blackboard at the end of your lesson on "sugar."

59. By what principles would you be guided in beginning the teaching of geography? Give an outline of the *first four* lessons you would give in this



subject, specifying carefully what apparatus you would need, and how you would use it.

60. What is meant by the faculty of attention? How does it operate, and how far is its exercise an act of will? Mention some devices by which a teacher can strengthen in his pupils the habit of close attention.

61. Write full notes of a lesson on one of these subjects: (a) The Spanish Armada, (b) the art of printing, (c) the parts of a house (for infants).

62. Name those subjects in a school course which are valuable respectively (a) as useful information, (b) as practically serviceable in the business of life, (c) as instruments of mental development, and (d) as helpful in the formation of taste and character. Give reasons for your answer.

63. In teaching history, what use do you propose to make of dates? Explain how you would teach chronology, how much of it ought to be taught, and what mistakes are often made in teaching it.

64. When and how far is it desirable to refer to the Latin or Greek derivation of a word in teaching children? Say what kind of previous knowledge should be possessed by them before such reference is made; and give examples of some words the meaning of which is made clearer by their etymology, and of others in which that meaning is obscured by it.

65. Give some examples of legitimate and of illegitimate forms of questioning, and give a few simple rules for the guidance of young teachers in practising the art of interrogation.

66. Name the different purposes which should be kept in view in the teaching of geography, and say by what means they can be best attained.

67. Much time is often spent by class teachers in causing words to be spelt aloud, and in repeating, as an oral exercise, the spelling of the same words. Do you think such an exercise either useful or necessary? If not, how can good spelling be taught without it?

68. Write out notes of a lesson on one of the following subjects: (a) birds of passage, (b) a carpenter's shop (for infants), (c) glaciers.

69. What are the advantages and disadvantages of setting scholars in a class to question one another at the end of a lesson?

70. It is set forth in the official instructions to inspectors that "from the first the teaching of English should be supplemented by simple exercises in composition." Explain in detail how you would give effect to this injunction in Standards II. and III.

71. Write notes of a lesson on one of these subjects, and say for what class of children your lesson will be adapted: emigration, a passive verb, a garden.

72. The Code prescribes that some of the exercises in mental arithmetic should be preparatory to the work of the next higher standard. Frame twelve suitable oral exercises for scholars in the Fourth Standard, calculated especially to facilitate the study of fractions in the Fifth.

73. Take the words *demonstrable* and *demonstrative*, *fortify* and *fortitude*, *residence* and *resident*, *dictator* and *dictation*, and show in each case, by reference to their structure, how the two words are related, and how you would make their exact meanings intelligible to a class, without giving formal definitions.

